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February

Wonder Stories

HUGO GERNSBACK Editor

"DUST OF DESTRUCTION"

By P. Schuyler Miller

Other Science Fiction Stories

"THE SLEEPING WAR"

By Dr. D. H. Keller

"THE OUTPOST ON THE MOON"

By Joslyn Maxwell

In This Issue

"THE GREAT TRANSFORMATION"

By Ray Cummings

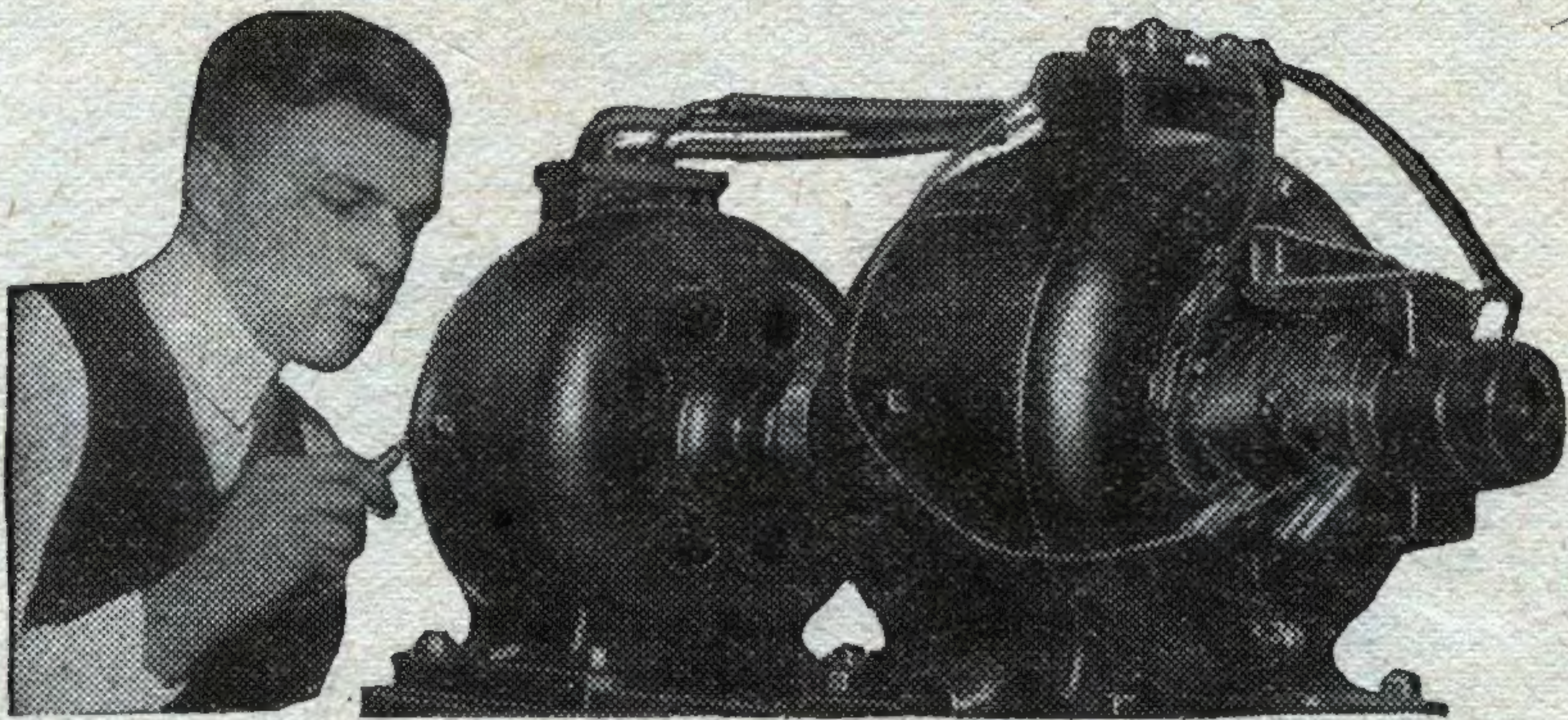


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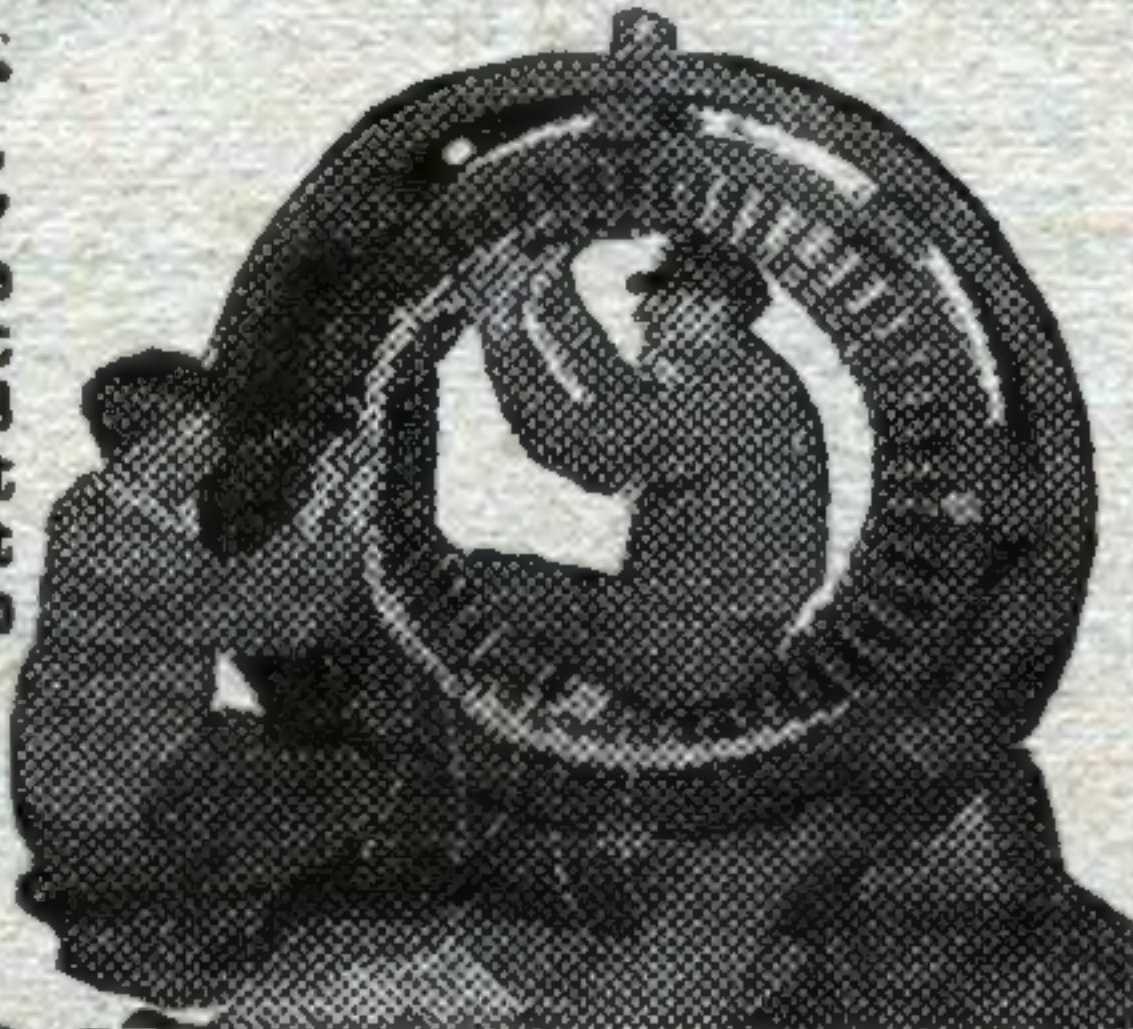
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February, 1931

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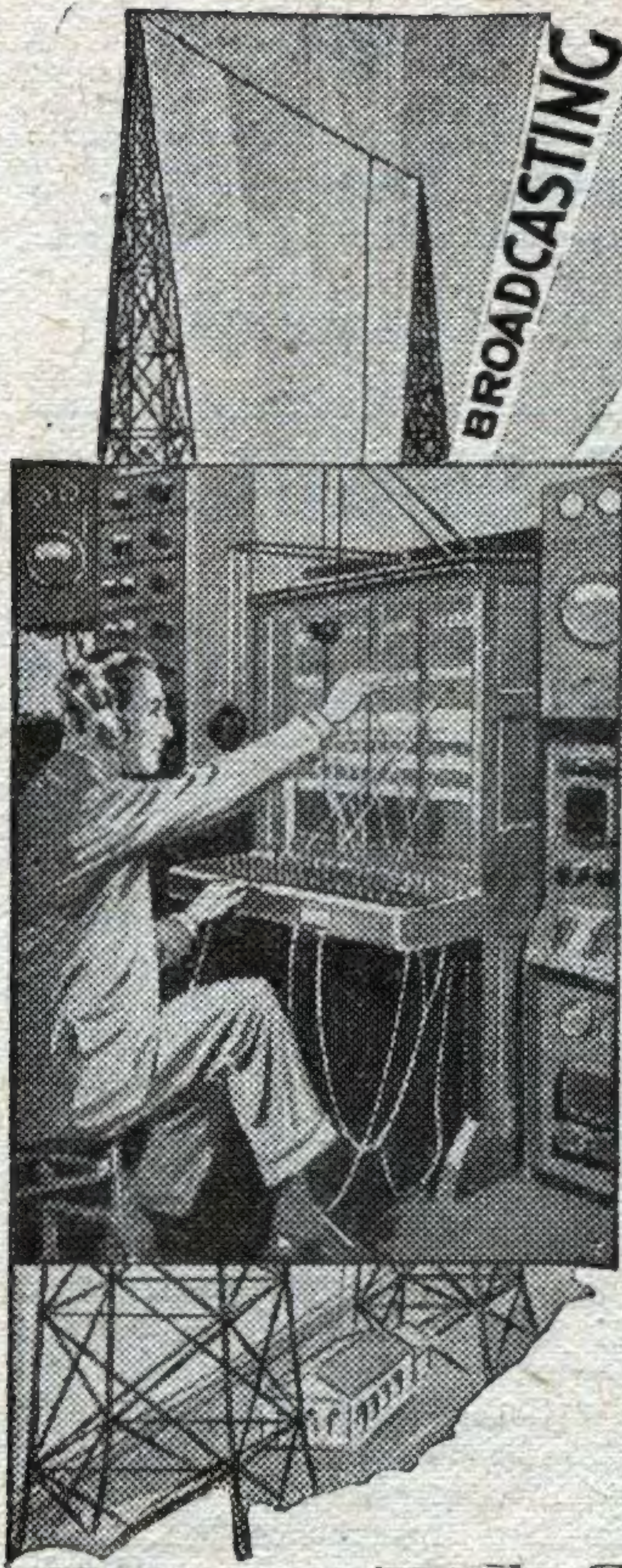
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THE WONDERS OF THE SIMPLE

By HUGO GERNSBACK



THE most difficult things for the human mind ever to understand are possibly the—to us—simplest things, and the simplest phenomena in nature.

It seems that nature has conspired against us in such a way as to keep the true essence of the material world hidden from our knowledge, perhaps for ever. As a matter of fact, it is doubtful that we can ever know from our own senses the ultimate truth of anything in our world.

Take, for instance, such a thing and as simple to us as a light beam. Science to-day knows little more about it than she did two thousand years ago. We do not know whether light is composed of particles,—as once imagined by Newton,—or whether light is in the form of waves. We know nothing as to the propagation of light in open space; nor do we know much of the composition of the sunlight in general, except that we may call it by other names, such as electro-magnetic waves, radiation and the like. The same may be said of all other radiations as well; because practically nothing is known about their innermost workings when we come down to the final analysis.

When we contemplate the simple phenomenon, manifest all around us every moment, which we call gravitation, even our best-informed scientists will cheerfully admit that they know next to nothing about it. We do not even know the speed of the propagation of gravitation, whether it be radiation, or whether it be a ray or beam or what not. We haven't the most remote idea as to how long it takes gravitation to travel a given distance. For instance, suppose the moon were suddenly to leave her accustomed orbit and fly off at a tangent, how long would it take the disturbance created thereby to reach the earth? Would the gravitational force travel at the speed of light, or would it be instantaneous? Science has yet given us no answer to this. We simply do not know what it is all about. Yet, all around us, these mysterious forces go on right under our own noses; and we must admit that we cannot solve the mystery, at least so far. The reasons for our poor knowledge of such "simple" phenomena may be far

more complicated than we can admit at first. As Sir James Jeans points out, in his recent book "The Mysterious Universe," most of these unknowable things are probably unknowable only because most of the ideas under discussion are mere creations of our own minds.

The human being, after all, is only a complete biological accident; and the human being has little relation to the world at large. And the human mind is probably constituted in such a manner that it can no more understand the ultimate designs of nature than a dog could understand, or even recognize a technical volume on astronomy. The dog could see the book, he could see the printed pages and the illustrations; but it would all mean nothing to him,—because his mind is constituted on such an entirely different plane of reasoning, and to him, of course, the book is totally meaningless.

It is so with the human mind. The plane of our reasoning is probably entirely out of any relationship to the ultimate designs of nature and our reasoning in most cases as to nature's designs is, probably, entirely irrelevant and, certainly, entirely inadequate to comprehend what it is all about. The human mind immediately tries to make a mechanical analogy of the unknowable when, most probably, there cannot be a mechanical analogy for such so-called simple things as a light beam or gravitation. It is even to be doubted that our senses interpret the outside world at all correctly; and, just because a number of people arrive at a similar conclusion, that does not prove that the natural phenomenon is in accordance with their understanding. It may be something entirely different.

For instance, a few hundred years ago, it was entirely contradictory to the best human reasoning that part of the world's inhabitants could face the sky one way, while the rest would face it another way; one part seemingly standing "upright," the other part seemingly hanging with their heads "down." It took a long time to digest even this simple proposition, which is entirely contrary to human instincts and human reasoning. It may be so with most of the other phenomena which we witness with our imperfect and usually misguided senses.



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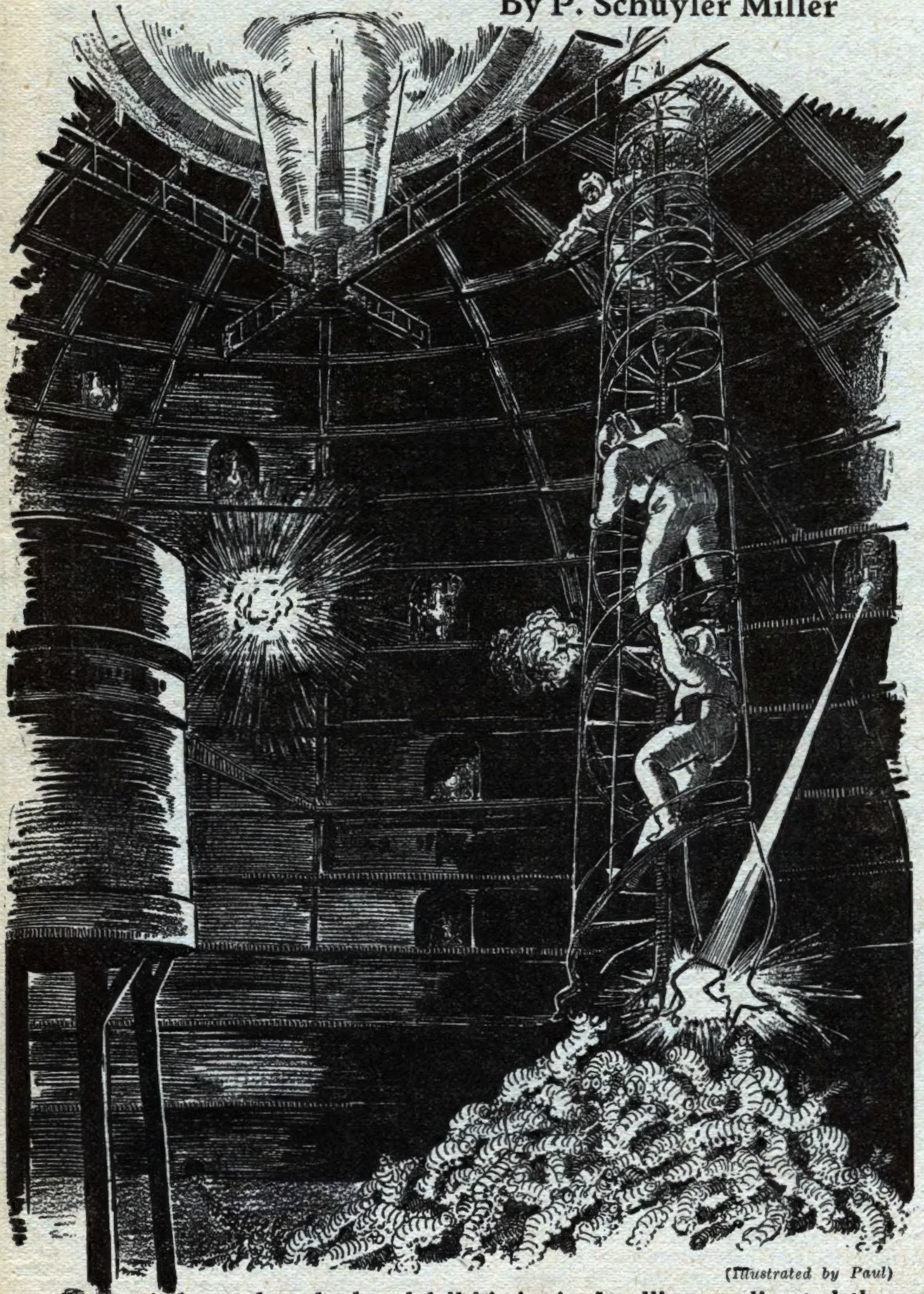
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Dust of Destruction

By P. Schuyler Miller



(Illustrated by Paul)

The stair beneath melted and fell hissing! Intelligence directed those rays . . . the Intelligence that threatened the Earth!

THIS old Earth of ours has passed through some pretty severe crises in its long and fruitful career as a minor planet—afflicted with a variety of life—but never has its danger been so great as in the frantic weeks following the inverted cyclone of August 23, 1967. I was near Norfolk when it happened; I was one of the little group that saw the thing through to the end, and now that it is over I am attempting a narrative that will set forth in a fashion more readable than technical the story of the “death-dust” from the Moon—the green dust of destruction.

In 1967, Norfolk, Nebraska, was a city of perhaps twenty thousand people. No one knows why the Dust struck there first, but the fact remains that it did. The Things had probably been experimenting for some time with a sort of sliding-scale of frequencies before they hit on what they were looking for, and there is ample evidence of extreme auroral activity and atmospheric fluorescence for years back. The day before, Tuesday the 22nd, I had been motoring west on a canvassing trip, and I remember that the radios of eastern Nebraska were raising a brand of Cain that even my patent static eliminator could not iron out.

At 8:37 on that Wednesday morning I was

burning up the road between Stanton and Norfolk and had stopped for gas about ten miles from the latter city, not far beyond Stanton, where I had miraculously filled

my sales quota during a lull in the interference the day before. The Moon was well past full, hanging low in a cloudless sky. I remember talking with the proprietor of the gas station about the rocket that Norfolk's favorite son, my old pal, Dick Haverford, meant to aim at the Moon in a week or so, as soon as he gave it enough test-flights in the upper atmosphere. I jokingly said that I was willing to throw over my job if he would take me along, and the proprietor called me a fool and flooded the tank over, effectively transferring the compliment.

I was sunk to the back teeth in what is generally called a horse-laugh when out of the west came a flash of blinding light, followed by a shattering crash of sound that rattled my windshield and splintered the closed windows of the gas station. Then from the east came a wind—the wind—and like a man in a dream I watched my hat scale off down the road toward a murky pillar

of smoke or dust that was vomiting into the sky over Norfolk. The station was sheltered by a low hill of sorts, but in front, at the side of the road, grew a real old New Eng-

AS our author states, “this old earth has passed thru some pretty severe crises in its long and fruitful career,” and so has the human race, for that matter. We have won what civilization and comfort we now possess only by the bitterest struggle for millions of years against the onslaughts of nature and other forms of life.

And even what we have now we hold by a thread. Our life on earth is so uncertain that it would need only a very minor change in physical conditions to wipe us from the face of the globe. A change of a relatively few degrees in temperature either way, a change in the composition of the atmosphere; a minor solar disturbance are all things that are unimportant in the cosmos but totally disastrous for us.

Mr. Miller is no pessimist but he treats in a new, original and refreshing fashion of some of the troubles that might befall our old race and globe at any time. He shows, too, that inside of all of us, even the most callous there exists the hero and the martyr. Given the chance we would be willing to protect and save the race from any disaster, though our efforts may mean a terrible agony and even death! This is a most unusual story!

land elm, over a hundred feet tall, shading the station with its great green umbrella.

Now, as I watched it, the green leaf surfaces turned to show their pale under sides with the coming breeze. Then the twigs began to bend and let their leafy ends stream out toward the west, not with the fitful tossing of a brewing storm, but slowly, steadily, as if a mounting force were drawing them out. And now I saw that the great upper branches were twisting and bending, to give way to the wind. Slowly, like a weary laborer bending to his load, its mighty green crown drooped and the six-foot trunk took on a taut curve. And then it broke. With a white flare of splintered wood, it went bobbing off down the road like a giant stalked tumbleweed, while the shattered stump screamed aloud with vibration above the sullen roar of the rising wind.

Sand and gravel splattered the back of the car, and I looked around to see that the top of the little cut that sheltered the station was being torn down by the wind. All manner of things were tearing past and overhead—roofs, uprooted or broken trees and bushes, the tops of autos—and still the wind mounted with its droning roar, a queer unreal quality of leisurely, sleepy growth in its tone. As the wall of the cut wore lower, great air currents ripped nearer my car, where I sat in a sort of daze. I could detect now an ugly whine lurking under the sullen roar.

Everything happened at once. There was a new crash from beyond the edge of the cut and the fat proprietor fairly dove into my open car as a huge bushy maple popped over the rim and crashed full into our rear, driving me headlong into the open. In an instant the tempest caught us, the open top flapped forward and off with a snarl of ripping fabric, and I was bowling down the open road with the owner of the

gas-station gripping my neck in a frantic stranglehold.

The wheel was no good for steering—it was of use only as a pillar, a post to which I could cling. The road ran straight for a mile or so, and for maybe a minute we swept smoothly between stripped fields where the grain clung in a mat to the ground. Then we struck a curve and the Buick took a wire fence below the level of the road like a racing greyhound, struck in a swampy meadow, and somersaulted end for end. I felt the garage man loosen his grip; then sensed a changing perspective of earth and sky, and my own grip loosened and I was being carried bodily by the wind.

The other man was now a blurred form in the air ahead.

OUR tattered clothes offered little gliding surface, and gravity very soon asserted itself. A second fence loomed, probably the other side of the field. The other fellow cleared it with a foot to spare and vanished in the dust beyond, but I met it fair and square, and with a crack of rotten posts and screech of freed wire was rolling head over heels through the water-stripped mire of a small pond. With

an ominous buzz of splintered fibers another elm whipped past me, butt first, and struck the opposite bank of the pond, driving deep into the mud.

In the fraction of a second that its course was checked, I found myself firmly wired into the heart of the mass of stripped branches, and then my strange steed was up-ending it across the fields, filling me with a wholesome fear of death every time its mighty crown struck the ground and new splinters sang around my head. Then there would be a breathless, rising glide—a heart-shaking swoop—an instant of crashing limbs and flying branches—then on and up again.



P. SCHUYLER MILLER

I can't even start to describe that race with the wind, straight across Nebraska for ten fearful miles to the devastated city of Norfolk. My tree was a big one, and for a large part of its trip it traveled crown foremost, dragging the heavy butt, but every now and then it would drop, up-end, and drive like a dart until it struck some obstruction with a shattering crash and spun end over end for a new start. I know that we drove clear through the walls of a farmhouse where people still clung for shelter, and that we hurtled through a brief grove of splintered tree-stubs that were screaming madly above the wind with shrill vibration. I knew, too, that the wind was falling somewhat, for its throaty roar was growing deeper and lower. But when the trunk of my tree snapped off and we hit Norfolk I cannot tell. I was probably unconscious.

* * *

A rising sun found me plastered amid debris of tree and fence and city against the still-standing wall of a bank-vault, up to my neck in a fluffy green dust that was piled in great drifts and dunes all along the remaining walls of Norfolk. To a keener sense, it might have been gritty, for it seemed angular and crystalline, and on my tongue it felt granular, but to eyes and fingers it was merely a fluffy emerald powder that seeped and drifted through and into everything and everywhere. It was light enough to retain considerable air, except where it was packed in a thin crust along the walls, and when I felt something squirm against my feet I was able to burrow in and drag out the man still alive and kicking.

He was a physical Hercules, but the wind had stripped him clean; for, unlike me, he had had no buffer. It was a miracle that no bones were broken, though his mighty muscles were purple with the ruptured capillaries of great livid bruises. Around his waist still hung a cartridge belt and automatic, and in that instant I recognized the face behind the tawny uncut hair and stubble of beard. He was "Red" Brockton, tramp and bank-robber, whose pictures and finger-prints adorned the post-office wall in Sheldon. He showed signs of coming around, so my discretion prompted the

transfer of his little arsenal, and my valor consequently survived a rather abrupt depression.

I do not know how or where he had gone to sleep, but he woke with the fine green dust in his hair and his ears, and the barrel of his own gun centered on his stomach. I had read somewhere that such a target often secures a moral hit long before physical contact would register. It seemed to work.

"What the hell?" he wanted to know.

I was noncommittal.

"Leggo that gun—you're pointin' at me!" he bellowed peevishly.

"Nix." I informed him. "I'm perfectly comfortable as is. You just lean back and contemplate Nature at her best—or worst, if you like it better."

"Funny guy, ain't you? Well, the lead's yours—I pass. What's your hand?"

"I have openers—or an opener."

"Yeah. I had it last deal."

"Sure, but this is now—and here. Feeling at all agreeable and open to suggestion?"

"That depends."

"Naturally. Listen here. I'm going to make you a proposition. Are you listening to it?"

"Shoot."

"It's this way. I don't have to tell you that something or other has raised particular hell right here where we're sitting, and for plenty of miles around. We're luckier than most, so it's our play. Well, let's play it, and play it straight!"

"Um. Go ahead with the spiel."

"I guess there are plenty of people around here who need help, and not too many to help 'em. The really lucky ones are dead. I'm pretty well, and you look as if you could still lift a safe or so, under the sore part. I know you, or I wouldn't have your gun, but my memory isn't so good after I've been working hard for a spell—say at relief work—and I have an idea there will be others around who have just about the same kind of memory. Of course, if I'm lifting houses off of people, I'm going to need both hands, but that's no

drawback if you have everything straight. How about it?"

"Well, it's a proposition. Suppose I accepted, an' then plugged you?"

"You couldn't. I keep the gun."

"Hell! I thought there was a catch in it! How about afterward?"

"Afterward is none of my business, that I can see. I woke up sitting on you and I acted accordingly. If we gang up on this relief work, you're just a husky house-lifter so far as I'm concerned, and if any police turn up who have better memories than I have, then you're on your own, unless you want to take a chance on what pull I have here in town."

"Good with me, feller. I'm on. You know me. Well, who are you while we're teamed up?"

"Call me Hank, if you want to. It saves time, and it's been done plenty of times before. If you're in a hurry, you won't use a name anyway, so why worry?"

"Good with me. You can stow the gun, if you want to. My say-so is good."

The City of the Dead

TOGETHER we climbed up on the flat top of the wrecked vault and looked around. On every side the city lay in ruins, banked deep with the glittering green dust of destruction, like long drifts of powdered jade or emerald. And yet, the green wasn't quite so emerald or jade, either. It was more like some of the spectrum lines my old Physics Prof had showed me, from the light from some of the diffuse nebulae of the Milky Way. The wind had snuffed out any fire that had started, just as you would blow out a match. All around us was just a desert of green dunes and jutting ruins of cement and metal-work. Whatever had hit Norfolk had hit unmercifully hard! Our work would be all too easy.

For three hours we searched the ruins of Norfolk for living victims of the storm—all in vain. What we did find sickened us until we hated and feared to drag aside a timber or dig into a mound of the green dust. A few, like ourselves, had been blown in from outlying districts, and were merely scratch-

ed or bruised—dead of shock, mostly—but of all the twenty thousand and more who had lived in Norfolk before the disaster, not one was alive or even recognizable when the dawn of August 24 broke. The dead reminded me horribly of the old, cruel experiment of the frog in the exhausted bell-jar, for the awful truth was that *every living thing within the grasp of that inverted cyclone had exploded!* Bloody ribbons of terribly torn flesh remained, clinging to raw bones—no more.

About noon of Thursday we ceased our dreadful search and hunted in the cellar of a ruined grocery store for food. Water there was in plenty, spouting from broken mains and piping, washing away the light green dust from the horrors that it hid.

Thanks to the incessant flow, a thin green mud was forming in all the depressions, mottled here and there by a hideous brown-ing red that turned us weak and pale from memories of what it meant. No other relief workers appeared. They had enough to do in the territory where the real hurricane had laid the land waste for miles and miles. But with noon came a gleaming shape of metal and crystal dropping slowly from the clouds through the slow drizzle of rain, sending Red in a headlong dive for shelter. It was a giant stream-lined rocket, such as theoretical publications had so often shown, soft golden vapor drumming gently from three great jets as it eased to the clean-swept intersection of Norfolk's two largest streets.

Forgetting Red for a moment, I ran to where it had landed, banged with my grimy fists at the polished walls rising a hundred feet and more above me, kicked frantically at the unresponsive metal, clawed at the port whose outline I could see just above my head. I was mad with a mixture of relief and terror, joy and anger, and like a child I took it out in petulant physical defiance of the great rocket.

From far above a voice shouted angrily. "Hey, you, cut that out! What do you think you're doing anyway?"

That voice—Dick's voice! I stared up, fifty feet, to an open port. A head was sticking out, a brandished fist threatened

me—Dick's fist! I let out one whoop of joy, jumped five feet in the air, danced from foot to foot in excited eagerness.

"Hey, Dick, it's me! It's me—Hank! Come on down here and get me before I go clean crazy!"

"Hank! Why, you old son-of-a-gun—what are you doing here? Where on earth did you spring from? Hey, Doc, for the love of Mike look who's here!"

Another head popped out, above his, white-whiskered like an image of George Bernard Shaw in the old Thirties—by all the gods, Doc Jarvis—old Jarvis, our Physics Prof! What was going on here?

A ladder of flexible cable unrolled from the port, Dick scrambling down as fast as it fell. He dropped the last ten feet and began to hammer me on the shoulder, my sore shoulder. I hammered right back till he quit.

"Dick, what has happened here? How did you escape and when did you finish the rocket? Where have you been? Where are you going? How — — ?"

"Wait a minute! What am I—a World Almanac? Give me time, for the love of Mike! And tell me how you get here and struck it out without exploding when the pressure went down."

"Oh, I came in with the wind. But how did you know they exploded here? And—hey, where's Red?"

"Red who?"

"Why, Red Brockton. He was with me a minute ago when you landed. I'll bet he thought you were the police, and lit out! Hey, Red! Where are you? It's all OK, come on out!"

"Police? What kind of company are you keeping, anyway? Who is this Red Brockton?"

"Never mind who he is, if you don't know now—he is, and that's enough. Maybe he is wanted by the police, but you're no more of a preacher than I am, and what's not my business is none of yours. Sabe?"

"Oh, sure. No offense. I just wondered."

"OK. He's a hard liver, but he worked here with me like a regular man today, and I'm for him! There he is—hey, Red! Come on over here and meet my friend."

I INTRODUCED him to Dick, and to Doc, who had come down while we were talking. I told them what I had seen, and what had happened, and Red confirmed my description of the catastrophe with a rather guarded story similar to mine.

"And now, where do you come in?" I asked Dick.

"We were on our first trial trip—five hundred miles or so out of the atmosphere—and we saw the thing hit, and what happened, and we came in as fast as we could without heating up too much. What you have said confirms most of Doc's ideas, and believe me, this thing is plenty big! The next time it happens, they'll have it under control, and in quantity, and then—goodbye Earth! We're done for—a race stamped out completely—unless the four of us can put a stop to whatever is brewing. I take you for granted, Hank, you're one of us. How about you, Brockton?"

"Where you goin', an' how long?"

"It's the Moon we're aiming for, and we'll hit it. We may not come back, but we'll die fighting for this old Earth of ours! It will be a bigger lay than anything you've been in, Brockton, and you're big if you join us. You don't have to, if you don't want to, but I'd like you along. Coming?"

"Good with me. This state hasn't too much love to waste on me, and it won't put me out any to leave it, even for the Moon. I'm with you."

"Good. And listen here—I'm not asking who you are or what you are. If Hank knows, he'll keep his mouth shut. He knows how. I'm boss unless you all disagree with me or we're separated and thrown on our own. Are you still with us?"

"Oh, sure. Let's get goin', if it's like you said. It don't pay to stall any in a tight place."

"Right. Come on."

CHAPTER II

The Threat from Beyond

IN THE main chamber of the rocket, the port was carefully sealed and Doc raised us while Red and I stuck to the padded chairs. It was just like going up in an elevator, the floor pressing hard on our feet and our breath coming slowly to heavy lungs. For a moment, after we got higher, Doc threw in nearly full power and as the great rocket sped ahead in its course we were plastered into our air-cushions by the enormous acceleration, as if a giant were shoving us back. The cabin became a whirl of bursting color-bombs, and my blood pounded in my ears. But as our velocity became constant, or nearly so, conditions returned to normal and I felt able to look from a port at the Earth and to take notice of the rocket itself.

The clouds that the sudden storm had brought rolled in a great white sea far below us, veiling the surface of the Earth, which was already assuming the shape of a great bowl. To the west the mountains were jutting above the low-hanging clouds; to the east appeared the momentary glint of the Great Lakes and the deep green of the Appalachian forests. As details melted and faded one into the other, the deserts began to take on a reddish-yellow tint. They were at great variance with the mottled green of the Mississippi valley, bounded on the west by a chain of dazzling white. Dappled with clouds through which the great central rivers appeared in silver etching against the shadowed green—they were a sight that no man's experience had equalled.

The rocket itself was worthy of notice. The cabin where we were was roomy, about fifteen feet in diameter and of equal height, with heavily padded walls and ceiling. There was a broad seat running all round the room, padded with air-cushions of course, with straps set in the walls at shoulder level. Here and there were deeply sunk padded recesses like chairs, while other firmly fixed swivel seats were placed about the room. Large ports, at sixty-degree in-

tervals, were sunk about five feet in the walls, while a bulging quartz bulls-eye, set in a metal frame, gave a clear if lens-like view of the outside world. There were cupboards set in the walls, with books, chemicals, and the like, and the space beneath the seats was utilized for other labeled cupboards for food, spare implements, and such accessories. Doors led into the hollow walls of the ship.

In the very center of the room was a great circular control table, with huge levers set about it and keyboards flush with the white-enameled metal surface. Beside the three control chairs, a master-control and two duplicates were set bakelite panels with a formidable array of meters and gauges, each with its dial and graphing stylus. And in the very center of the table, sunk a little below its surface, was a plate of frosted glass in which was mirrored a panorama of the outside heavens, divided into rectangular sections by a system of cross-hairs. Beside each control chair, a binocular eyepiece permitted a reduced view of this same panorama, with a switch to permit an enlarged view of any section of the plate.

Now Doc had turned over the controls to Dick, and had settled down to give us an idea of what was happening. We had put on coats over what remained of our rags, and even Red was looking reasonably at his ease.

"In the first place," began Doc, "you probably want to know how this ship is propelled. In rockets of this type, fuel is always the big problem—maximum energy for minimum weight. The early experimenters and writers developed the other details—construction, materials, everything but the hull and the fuel. Up 'til now, liquid hydrogen was the best bet. With the discarded shell system and a small residual body, you could probably get to the Moon and back, if you were careful and ran on a mighty narrow margin. With refueling posts in space, you could get to another planet. But nobody wanted to try it, and no government would risk the havoc caused by the falling of cast-off fuel-shells.

"We, Dick and I, used hydrogen to get clear of the Earth. Then, following Dick's

idea, we built a laboratory out here between Earth and Moon—just as writer after writer worked it out nearly forty years ago. We used the heat of the sun and the cold of space to run our turbines. We maintained artificial gravity by centrifugal force. *But we did more.*

“**D**ISINTEGRATION or else creation of matter alone can supply the limitless atomic energy that dreamers have wrote about. Science has found out that in the stars and in space these processes are going on. And so came Dick’s idea.

“Here in the void, using the electrical energy of the solar turbines, we learned to build up the elements clear through to uranium,* just as Nature does. We could not control the energy produced, however, so disintegration alone was left to us. It was Dick’s idea to build far beyond uranium, until we came to an element whose disintegration we could control at will, providing well-nigh unlimited power in small mass and bulk. We did it, and our synthetic element, *astron*, controlled by the apparatus here beneath our feet, is winging the ship on her way.

“Now for the catastrophe that is threatening Earth. Out here, we saw the great ray flash into the atmosphere and blot out Norfolk. Men, *that ray came from the Moon!* I know how it acts, and I know what will happen to our old planet if we do not kill this thing right at its source, and do it quickly!

“You, Hank, have seen Coolidge’s cathode ray at work. Remember how it makes rock salt turn violet, and how acetylene gas falls in a dense yellow powder? There is your clue. This is a ray, a cathode ray generated on the Moon, of such a frequency as will pump energy into the nitrogen of our atmosphere and cause it to fall in the fluffy green powder that you saw. The observatory, up above, was in the path of the ray,

*Uranium is one of the radio-active metals, which disintegrates into lead, giving off energy at the same time. The point is that this disintegration is terribly slow and can neither be accelerated nor slowed up. It has been felt that if it could be accelerated, then man would have limitless energy at his command.

and I have studied what happens to the air.

“Four-fifths of the atmosphere—equal to twelve pounds of pressure out of the fifteen per square inch that exist on the Earth’s surface in our neighborhood—fell in green dust. From what I have seen, Norfolk must have been buried thirty feet deep in the stuff. It was an inverted cyclone, pouring dust upon Earth just as a real tornado sucks it off. Norfolk was smothered in dust, though the oxygen remained, but there was one more fatal result. Suddenly the atmospheric pressure over Norfolk was dropped to a small fraction of its normal value, and, like a frog in an evacuated bell-jar, *every living creature exploded from his own internal pressure!* Then the rest of the surrounding atmosphere rushed to fill the breach, and the awful storm came and spread dust and destruction far and wide.

“One thing more. Whatever creatures inhabit the Moon are waging this war of death on our Earth. Perhaps they do not know that we live there, any more than we have been aware of their presence. Their science shows them an ideal planet within arm’s reach—theirs for the taking. They need it, for some reason or other. But the pressure of the atmosphere may be many times too great for them to bear. I don’t know. But if true, their science comes to their rescue with this cathode ray of just the proper frequency, and presto, the pressure drops to less than a fifth of its normal value wherever the ray strikes!

“Men, I believe that just as soon as they can assemble power enough, they are going to ray every bit of nitrogen out of our atmosphere! Every living thing on Earth will die, and then the Moon-creatures will come there and take over the Earth for their own! I think the destruction of Norfolk was more or less accidental—the end of a random range of frequencies. They will try once more, to make sure, while they are building up the necessary power, and then—poof—and we’re out of the picture for all time! We’ve got to stop them, and do it quick!”

“If that’s how it is, I’m all with you, to the limit!” put in Red. “I suppose you’ve

got somethin' to keep us from blowin' up ourselves when we get there?"

"Yes, space suits for all of us. They have weighted shoes, to take care of the gravity, but we will have greater mobility if we do not use them. We can decide when we get there."

"Be sure Brockton gets everything straight, Doc," put in Dick. "If we're separated or killed he may have to know what to smash. There won't be much time to waste when the scrimmage starts."

"That's all right," said Red, "My business made it necessary for me to learn somethin' of science. I know what he means, an' what to smash when I get there, an' I think I'll leave off those lead shoes if I can. When I'm in a hurry I want to move fast. Another thing, do I get my gun back now? I have a hunch I'll need it before we get through."

"Sure, Red," I answered. "Here you are. You're one of us now. Dick, have you another one for me?"

"Right in the cupboard when you need it. Better put yours there, Brockton. You won't need it for a while yet."

"OK. But you can trust me, honest. And I wish you'd call me Red. That's my real name, no matter what else I call myself for a while."

"Come on, Dick," I said, "loosen up a bit. Don't be such a crab. Red's just as good as any of us here, and don't you forget it! Maybe he slipped up a few times—who hasn't? There aren't many ways you can get the thrill of adventure and fighting out of your blood, except by bucking up against authority of some kind. You did it plenty in college! I'm not forgetting some things. If you can't get it out of your head that you're the million-dollar citizen of Norfolk and the United States of America, why, I say you're no man to lead us!"

The Second Attack!

"DON'T take it that way, Hank! It's only that we three are old friends, and he's an outsider. I can't just take him as an old-timer right off the bat."

"Well, I can," said Doc. "My memory

can lapse as well as the next man's if we get back, but just now I'm remembering a few things I've read in the papers and books. Mainly I'm remembering an old Englishman by the name of Robin Hood, and wondering if *his* hair was red. Shake, Red!"

"Thanks, Doctor. I sure appreciate it! It hurts always to be on the outside lookin' in—on the defensive against everyone. Maybe you think I came along just to get clear of the police, but I didn't. I liked the way Hank, here, put things up to me when he dragged me out of the dust-pile; and I liked your looks, yes, an' his too. I thought then you were men I could fight alongside of for a while—sort of gang up against the things from the Moon, an' whatever's makin' it! I'd still like to, if he'll let me in on it, all the way."

"Right, Red. Teamwork it is, from now on, and stop us who can. I'm Dick—don't forget that. Between us we'll have 'em licked, or I miss my guess. Here, Doc, for the love of Mike take these controls while I get some clothes on these birds! We've been talking so dead serious that we never realized that they look barer than Fijians in their bathing suits! Red may stick out of my clothes in places, but Hank is your size, near enough. We have to be dressed right up to the hour when we meet the Man-in-the-Moon's daughter!"

During the three days that we were in space on our way to the Moon, I explored the rocket until it was thoroughly familiar, and learned the technique of the control-board. Below the control-chamber were store rooms, packed for any emergency, and the mechanical maze of the discharge-room at the very bottom of the ship, with a confusion of orderly-disorderly machine-giants feeding *astron* to the jets. At the very top of the rocket was the great room where Red spent most of his time, a huge quartz-windowed observatory with metal shutters that could be opened from inside and a twelve-inch refracting telescope with all the attendant instruments of modern astronomy—spectroscope, micrometers, bolometers, and all the rest.

The view was wonderful—of stars and

nebulae and planets, with the Milky Way strung in a great necklace of suns across the black throat of space, and the pock-marked white desert of the Moon dead ahead. We had flexibility enough to maneuver the sun to our rear, where its blinding light would not interfere with our view of the heavens. The little laboratory in space showed too, for a while, a faint speck of light against the dappled Earth. Doc was busy most of the time making observations, and Red, who never tired of the view, helped him more than any of us would have suspected.

As we neared and passed the neutral point of attraction between Moon and Earth, we took advantage of the lack of gravitational pull to put on the heavy space-suits and practice maneuvering in them. A constant tension of every muscle was necessary to prevent any sudden motion that might wreck us and the ship alike by dashing us into the midst of the controls. But before it became necessary to decelerate the ship for the landing, we were reasonably adept at the art of walking in a field of reduced gravity.

Red and Doc were by far the best. Red's uncanny control of his every muscle was simply amazing. He was one of those rare individuals who can twitch parts of their skin, like a horse, and practically every part of his body obeyed his mental control. A few times only did he experience the sensation of utter helplessness that comes from moving too suddenly, with the accompanying suspension in emptiness, like Mahomet's coffin.

With Doc it was not the control that was so perfect, but a knowledge of exactly what motions were or were not safe. Still, he took a few pretty tumbles, and once Red had to drag him out of the very top of the observatory, after he had been thrown off his seat by the lurch of dodging a meteor swarm. Meteors, incidentally, bothered us very little and, as we traveled well below our top speed, we were able to avoid the big swarms with little or no damage to the ship.

We were about an hour from the Moon, decelerating continually, when the great ray stabbed again, straight from the mighty crater of Tycho. We were watching the image of

the Moon in the ground-glass, and as a pale shaft of light darted from the heart of the giant crater, Dick rocked the ship with the laterals, to get a view of the Earth from the side ports. Almost instantly the center of the darkened disc of Earth was marked by a stab of brilliant white light, a pin-prick against the red-rimmed black. The Moon-creatures had struck again, for certainty: and now we had barely time enough to make Tycho before they should loose their ray for the final time. We must stop them, before they began their last awful barrage of death, and we must stop them for good!

WE dropped slowly into a great crater at the southern apex of the Mare Nubium—the Sea of Clouds, as the old astronomers called it. The region near Tycho was a blistered wilderness of craters and ring-plains, great and small, but in that desolate labyrinth of crevice and crater it would have been next to impossible to find the rocket again. Hence we chose a prominent spot and dropped the rocket well under the eastern wall, where the shadow of the great cliffs would hide its polished brilliance from hostile observers.

By common consent, Doc was the first through the air-lock. Scrambling awkwardly through its rather narrow port, he jumped and dropped with uncanny slowness to the ground, throwing up a thick spray of pumice from the foot-thick layer that covered the crater floor. Indeed, this fine pumice covers most of the Moon, deepest in those great rolling plains known to men as Seas, where it often buries entire craters; and but a fine dust on the lofty tops of the crater-rings and mountain-ridges. The rest of us followed him as fast as we could, and we raced across the crater floor for the southern rim, shooting high with every leap and despite our recent practice, sprawling awkwardly to the ground again on landing.

Red forged ahead rapidly, with Doc not far behind him, and when we reached the foot of the cliffs they were clambering from crag to crag high above us. I at least, knew how to fall, having had considerable practice, so I threw caution to whatever winds the Moon might have and went up the

first almost perpendicular slope in three great bounds. Then I dived for a higher pinnacle, jumped from there to a knife-edge of lava that ran up at a sixty-degree angle, scrambled along this for about half a mile, and then tackled the last up-grade in a series of flying leaps that took me past the scrambling forms of Doc and Red, who had not my momentum. I popped like a released cork over the final ridge, and started headlong down the other side in a growing avalanche of bleached and weathered pumice.

When the others reached the summit, I was perched on a spire a quarter of the way down the outer side of the ridge, ten or twelve feet above the level of the rim itself. The panorama was certainly magnificent. About one hundred and seventy miles to the south rose the great rampart of Tycho, jutting mile on mile into sheer emptiness. Between it and our crater lay a jagged maze of craters, great and small, through which threaded the dazzling white streaks of Tycho's mighty ray-system, streamers of white spreading in a huge network across the entire surface of the Moon. From the rim of the crater they looked like cracks that had been filled with a dull white enamel.

Behind, beyond our crater, lay the great dark plain of the Sea of Clouds, while a narrow streak of dark stuff lay off to the right, running straight for Tycho, like a somewhat broader crevice that had not been filled with the white stuff of the ray-system. A bay of the Sea of Clouds ran up on the left, the lunar west, as it is reckoned from the point-of-view of Earthly directions. And everywhere, rising in a wonderful chaos of sun-bleached rock with here and there a streak of delicate color, were the southern craters of the Moon.

I could have stayed there for hours, just looking out over that wonderful panorama of planetary wreckage, but we had no time to waste. We were all connected by radio, in addition to having microphones to pick up sounds from the outside, so I threw in my switch and caught Doc in the midst of an excited lecture to the effect that there could be life of sorts here after all, as he had seen a very, very faint flicker of convection cur-

rents rising from the hot rock of a small craterlet in the wall.

Dick reminded him that we already knew perfectly well that there was life here. We had come, he said, to find and wipe it out if we could, or make terms if it was necessary. There was no time to listen to lectures if we were going to have a stab at saving life on our planet from utter destruction. And so, perched there on our pinnacles at the crater's rim, we planned our campaign of attack.

CHAPTER III

The Army Moves Up

FIRST of all, we would proceed separately, and as secretly as possible, in order to keep all our eggs from being smashed together. We would go straight to Tycho, unless we discovered anything to change our plans, in which case we were entirely on our own. We would scout out the situation, reach the ray or the power source if possible, and put a spoke in the lunar wheel in any way we could. If we couldn't carry on alone, we would hunt for the rest of the gang and wade through in a body. After we left the crater, and until we grouped again, we were our own masters, proceeding as we saw fit, but wasting no time in gaping at the lunar landscape.

Red, as the best walker of the bunch, was to advance through the maze of craters to the left; Doc would go straight through for Tycho; I would cut in from the right, along the dark ray that came up from the north; and Dick, as Napoleon of the expedition, would do as he pleased—all perfectly clear, and all too simple!

We already had concentrated food in our belts, enough for a week's ration, and had strapped on our weapons—an automatic and a sort of short-sword or bayonet. Red and I, as best shots, were given two rifles. And so, with waves of the hand, we set out.

As I leaped awkwardly off to the southeast, I saw Doc slipping down the crater-wall in a cloud of pumice, Red striding like a bulbous Colossus through a minor inferno of small pits and craterlets, and Dick stand-

ing alone on the rim, staring off toward Tycho, and I wondered what his plan could be—a plan that only Doc and he knew.

It was about thirty miles to the dark strip. I made it in about an hour, threading an erratic way through the jumble of crags and craters with more than usual care. As half of the rifle-squad, it behooved me to move quickly. Then, for very nearly fifty miles, I hopped and floundered through a two-foot layer of dark pumice and ash, along the course of the black streak. It wasn't really black, but more of a dark grey, from the quantity of powdered lava and ash that was mixed with the white pumice.

The streak itself was a great, low-walled crevice that had been widened by erosion and volcanic action, through which black lava had welled up. Here and there were little pits or blow-holes in the lava, and I thought I could detect billows of vapor in their depths—moisture of some sort. Now and then I had to rest for ten or fifteen minutes, and ate a capsule of the concentrated food from the container in the cheek of the helmet, for the going was hard and I over-exerted shamefully most of the time. All in all, it was about ten hours before I reached Tycho, and plenty had happened in the meantime.

As I advanced to the south, the walls narrowed and the left-hand ridge became a more or less continuous dyke, so that I climbed up to its top in order to make better time and get an idea of the country I was headed into. There wasn't much new in it—a few pretty big craters and a flock of smaller ones between me and Tycho, a few short rays of the white stuff running out and sinking into the surface here and there, cracks, ridges, deep pits with their sides and bottoms in shadow—just another lunar landscape. It was going to be the easiest going off toward the southeast, where a bigger ray than usual cut off straight for the horizon like a polished white rib among the bleached rocks. I crossed the crevice, and struck off in its direction.

All this time I had seen no signs of the life that we knew must be here. In the deeper pits and the bottoms of some of the crevices I saw vapor that might well have

been water, and there were faint convection currents above the heated rocks that told of an atmosphere of sorts. But the sun shone down with such fury that the rock must have been at a blistering temperature. My suit kept out most of the heat pretty well, but the sun's glare on the white rock hurt my eyes even through darkened lenses.

Not much life *could* live here—the Moon-creatures must be underground or in the larger craters like Tycho and Copernicus. And then, in the shade of a small, deep crater, I found what would have set Doc off in a whirl of excitement—lichens!*

They were real honest-to-goodness lichens, sun-bleached to a yellowish white, with huge, bulbous spore-cases of bright crimson. How they could live on this volcanic desert I do not know, but there they were, just as if this were a mountainside at home. I went on with a distinct thrill at this first life on our supposedly dead satellite.

By this time I could regulate my leaps better, and so make far better time; and as the rib or ray of white stuff drew nearer I put on full speed and reached it in a helter-skelter flurry of dust and rock chips.

AS I had guessed, it was a low rib of some white, porcelain-like material, running out from Tycho to parts unknown. The top was only about ten feet above the mean level of the surface, and its section was decidedly oval rather than circular. As far as I could see from my vantage on a pinnacle, there was no opening in it anywhere—just a long flat tube of dusty white porcelain or enamel threading its way among the craters, straight for its goal.

It would be easier going on top, so I launched myself from my pinnacle in a great flying-leap for its top. I must have been traveling pretty fast, for when I hit there was an instant's checking and then I shot on through and fell thirty or forty feet to the floor of the crevice that it roofed. The stuff was very thin and let quite a bit of light through, so that I could take stock of my surroundings with success. At last I had ample evidence of intelligent life *on the Moon!*

*A low form of plant life formed as a fungus on trees, rocks, etc.

Here was a natural crevice that had been roofed and floored with white, heat-insulating porcelain, with metal ribs shoring up the sides. Sunk in the smooth floor were little parallel metal grooves, running the length of the tunnel, some six or eight feet apart. Down the crevice a hundred feet or so, another tunnel ran at a steep angle down into the rock, and in the darkness below I could hear thinly the roar and grind of machinery and the gurgle of water.

Even as I was crouching at its mouth, trying vainly to pierce the darkness, my microphone registered a swift whirr and click from the direction of Tycho, and I pressed back into the tunnel-mouth as a great fifteen-foot wheel swept past along the farther groove. At its center was a little cube of perhaps two feet on a side, with a round crystal port in the front. No sooner had it passed than its sound died—it stopped. I was discovered!

There was no time for hesitation. Instantly I stepped back into the dark of the passage, felt its steep slope drop beneath my heels, and slipped swiftly back into the dark. For half a minute or less I shot between crowding walls, then a bright light burst on me and I fell with a great splash into a deep, eddying pool, the deafening throb and beat of machinery dinning on all sides. For one breathless instant I seized the impression of huge polished metal forms and whirling wheels, of globes of white light set in a low ceiling, then the vortex sucked me down and into a great conduit through which the water raced toward distant Tycho.

For maybe ten minutes I was swept along in the rushing torrent, buoyed up by my space-suit. I could tell that I was being borne deeper than ever into the bowels of the Moon, down God knows where, into the heart of the realm of these Moon-things. Would I escape? Would Earth be saved? Or would we die horribly, all four of us, and Earth become the plaything of creatures such as no man had seen or imagined?

Again light burst upon me, and I fell for hundreds of feet through space to bring up with a breath-taking spat on the surface of a great body of water. Enveloped as I was

in a buoyant space-suit, it was hard to see much, especially as I was lying face down in the water. By dint of much writhing and kicking, I managed to assume an erect position and look around me.

I floated in a huge metal reservoir, hundreds of feet in diameter, into which poured great jets of water from far above, where the walls of a cavern closed into a narrow cone from which flooded the blinding white light. Up from the hidden region beneath the tank wound a spiral stairway, to an opening in the cave-roof above. It was of metal, with two-foot treads and no rail to speak of—merely a strip of metal on either side. Opening out of the great reservoir were myriad open channels into which the water poured, and toward which I was drifting helpless in the grip of a strong current. I felt for my rifle—battered, water-soaked and useless. My automatic was in a sealed belt-pouch, safe.

Just as the current sucked me into the nearest channel my roving eyes caught a weird shape toiling up the metal stair—a glistening biped-thing with globular cranium and goggling, glassy eyes, neckless, with short, thick arms and stubby legs and hands like metal claws—some strange monster of the Moon. Then I recognized it, even as a blaze of flame burst from the dome above us and the metal stair crackled with blue fire, hurtling the long thing headlong into emptiness—the figure of a human being in a space-suit!

The Great Deluge!

THE lunar water-system was a gravity-flow, with all the dips and thrills of the wildest Earthly roller-coaster. I was whipped through great caverns of roaring machinery, through narrow, dark tunnels bitten into the rock, across great chasms opening to the outer air. Then came a last mighty upward swoop, and the stream slowed and dropped into a pool that lay open to the heavens at the bottom of a huge cylindrical pit. All around me in the half-dark bulked towering shapes of glittering metal, half alien, half familiar. My eyes strained into the darkness and the truth leapt to my mind.

Here were the rockets of the lunar races—waiting to leap out into space at the signal of the success of the destruction of the earth's atmosphere.

I scrambled out of the shallow pool, ran to the nearest rocket. There were no ports—merely ten-inch openings with curved, tight-fitting caps, little loading ports of some sort. How could the Moon-things enter—or were they even now sealed snugly within these metal walls, waiting to drive forth to the conquest of the planet they had killed? I stared around me. This was the floor of a small, deep crater, smoothed and altered for its single purpose. No doors opened into it, but in the walls close to the floor were sealed, circular holes, the mouths of some sort of tube.

Now my microphone caught a whine and whirr as something hurtled by beyond the wall, bound for the great crater of Tycho, the lunar metropolis through whose heart I had rushed in the grip of the flowing waters. And now I knew—they were pneumatic tubes for communication between the cities of the Moon! Where lay my duty—here, helpless, with the ships, or there, where the ray still burned? Or was it even now too late? Which must it be? I turned to the tube, jerked open the scuttle of the air-lock, crammed myself inside. There was a dim glow of light, and a little trigger of sorts. Edging forward, I jammed against it. It gave way. With a mighty rush of pent gases I was hurtling toward Tycho and the ray!

* * *

And now, for a moment, I must digress to make clear the movements of the others, as I later learned them. Doc took the shortest course, straight across a fairly open terrain to the looming rampart of the great crater. It had taken him perhaps six hours—uneventful hours—to gain the rim. He had not even seen lichens such as I had discovered. From the summit of the ring-mountain he looked out over the barren waste of the crater, nearly sixty miles across, with a giant central cone of ragged rock. Otherwise it was utterly bare—no cities, no life—only rough rock and pumice and a scattering of small crevices and cra-

ters. It was more than an hour later when he had worked through the thick dust to the central peak, and here he found the evidence he sought—a narrow black tunnel, leading down into the core of the mountain.

His subsequent trip was short. The tunnel opened directly into a great arching hall of many metal levels, where huge, strange machines poulded, unguided—an automatic metal world. Into one end of the great series poured molten metal, vanishing into metal maws. From the other rose huge polished hulks, rocket-ships, to drop into a tunnel and disappear. Like those I saw, there were only little hooded holes in their sides, like oil-cups on terrestrial machines.

He found a plunging stream of water, dropping out of the upper heights of the mountain, followed it, and came at length upon the great cavern of the reservoir, where a narrow spiral stair rose to the far distant roof. Halfway to the top there came a flash of blinding light, a numbing thrill of electric energy, and he toppled from the stair, missing the tank entirely, bounding from girder to girder until he struck the floor and lapsed into unconsciousness.

* * *

Red saw much more. Far to the west, he had, like me, burst into one of the porcelain runways. But when a great wheel swept past him, bound for Tycho, he was able to grasp its protruding axle, just above his head, and draw himself up. The speed must have been dreadful, and even his great strength was nearly broken, but he managed to cling unnoticed to the end.

The runway dipped under the crater's rim and opened into a spacious hall under the central cone, a hall into which other tunnels converged and pneumatic tubes opened. It was huge beyond all words, soaring clear up into the summit of the mountain, and wonderfully carved with strange geometric grotesqueries and laced with metal spans above his head. But he noticed only its filth, for the place was literally crawling with vermin—with great, disgusting shaped insects! They were all of a foot long, crusty green things with many-branched wiry antennae.

Their feet were broad and flat, like green snow-shoes, and had suction disks on the bottoms, with which they clung to walls and floor. The things swarmed over him in great wave-like clouds, over his arms and helmet, clogging his motions and sucking at the joints of his armor with a sort of sac that was slung under their bodies. As they crept over his helmet and peered evilly into its interior with many-faceted eyes that were filmed with playing color, he noted other strange organs clustered on their undersides—suckers, and toothed cups, and more—perhaps adapted for sucking food from the rock itself. On their rough green backs were the remains of rudimentary wings, and also round prismatic structures that seemed to glow in the light and fluctuate with its shading.

THEY were everywhere, all over everything, crawling with a rasp and pop of suction-disks that his microphone brought clearly to his ears. Evidently the air was much denser here. Shuddering, he swept them from him. These were the things that were driving the lunar peoples from their planet to ours! These were responsible for the doom of Earth! He strode angrily across the floor, crushing them beneath his lead-shod feet with vicious satisfaction. Where a pneumatic tube entered the hall, a buzzer was sounding shrilly. He yanked viciously at the scuttle. As it burst open, a flood of insects broke over him from the tube within, and he wheeled in disgust and horror and rushed madly across the room and through an open archway, mashing the things in scores beneath his feet!

They were everywhere in here too, but not so bad as in the great hall. Here were the huge metal girders that supported some sort of tank, and a spiral stair of many steps, winding up and up through a maze of beams and girders to a distant roof, whence a bright light was pouring. On the floor beneath the stair lay a queer, crumpled form, over which the insects were swarming, striving to tear at its joints with their devilish suckers. They were prying at every crevice, a huge filthy wave of dis-

gusting life that rasped and creaked like rusty machines in their eager hunger. It was a globe-headed thing, with queer, short arms and legs, heaving slowly with its heavy, intermittent breathing. God, it was one of the other guys!

He leaped forward, and even as he drew Doc's unconscious form from beneath the sea of clinging bugs, a great wave of rasping and a shrill, ear-splitting whine rose in the first hall, while a mighty torrent of the insects poured through the arch and over him, piling up a yard deep on the lower part of the stair. They were coming then, attacking at last, the lunar people, driving these vermin before them! Snatching out his automatic, he fired point-blank at the thing that loomed in the archway!

* * *

With the glancing blow of the slug on my helmet, I stumbled and fell, grabbing at my gun, then saw who had fired and yelled frantically into my transmitter. Here I was back again in the room I had left—returning here still in search of the ray! Lowering his gun, Red stepped back against the base of one of the great props that held the tank, resting Doc against it, and calling to me to come. I came. Back to back, Doc and the girder behind us, we fought the advancing horde. I mowed savagely into the crusty sea of green life with my clubbed rifle, smashing them in great swaths that oozed thick yellow slime and were swallowed by the thousands that poured over them to do us battle! God! No wonder these things had driven the lunar people to contemplation of the destruction of a planet! And with all their teeming millions and billions, it could not be long before they too would clamor for escape from this dead hulk in space!

Doc had come to, now, and was leaning weakly against the girder, fumbling at his belt. His hand came away with an oval metal canister — a hand grenade. It flashed at the low arch, struck just above its summit, and in an awful blast of shattering sound the wall before us collapsed, shutting off the outer hall. Again, again, and mangled insects were writhing in their death-throes in the two great pits he had

blasted in the cavern floor. But still they came, seeping through the crannies of the wreckage, worming out of narrow slits and crevices in the masonry of the walls, rising high about us and flooding over us in a rasping tide of green horror that crept and clung and dragged us down.

The foot of the stair had been blown clean away by Doc's second bomb, but the free end hung loose ten feet above our heads. There was no escape that way! And my rifle swung and Red's great boots kicked and trampled, and Doc beat and slashed with the flat of his bayonet-blade. And still the tide of green rose about us and bore us down.

CHAPTER IV

Toward the Tube!

"HEY!" bellowed Red above the din, his voice thin and resentful in the microphone. "Where's your loud-mouthed friend, Haverford, now? Is he still cud-dlin' his precious hide back at the ship, or has he got some slinky plan to sneak in and get all the glory while we do the dirty work?"

"He had a plan," gasped Doc. "He was coming here by air, in a little one-man rocket plane we had stowed away for exploring . . . He figured the ray would be in the top of the cone . . . that he might be able to get at it with grenades, after we got here. But he hasn't come—he hasn't tried. Maybe they got him, damn them!"

"Who got him? The Moon things?"

"Yes, these insects. I—I think these are really the creatures that are attacking Earth. I have seen no other form of life as advanced as they are—they have a language, use the pneumatic tubes and the machinery, seem to have a definite purpose in their attack."

"But it can't be these! Maybe the real things are besieged up there in the peak, like us."

"I hope so. These are too hard to kill, for us to ever be really safe. And I think they can live in the open, when the sun is up. Maybe there are other things that we have not seen, but these insects are intelli-

gent—they have the ability to survive. Perhaps we may never see those others, if they exist."

"Well," gasped Red, "you two settle it out of court. As for me, I'm goin' up—an' that now!"

With the words, he kicked free of the crawling sea of life and jumped for the end of the stair, caught it fairly, hung dangling by one arm. Slowly he pulled his body up, flung a leg over the lowest step, and was up. He lay a moment, panting, then wound his legs around a metal rod and reached down for Doc. With my gun, I cleared a small space, and he jumped, fell short by inches, tried again, and catching Red's outstretched arm was up! And then, after a moment's wild slaughter, I followed, felt Red's hand on my arm, and scrambled to safety, just as a newer, greater wave of the insects broke over the place where we had been!

None too soon had we made the trial, for now bright bursts of light stabbed from high on the walls of the cavern, white flames of heat that fused the support against which we had leaned and sliced it through in a shower of flaming metal. Slowly it buckled, dropped, and then, as the enormous weight of the water above surged across the mighty reservoir, the huge tank sagged and toppled, crashing into the wall, deluging the floor with thousands and thousands of tons of foaming water. A hundred feet from the swinging lower end, Doc fainted, and we paused in our mad scramble up the metal thread of the stair. Again the rays stabbed at us. The stair beneath melted and fell hissing into the flood. Intelligence directed those rays—the *intelligence that threatened the Earth!*

We had marked the places of attack, niches in the walls of the great hall, with crystal ray-tubes set behind stone barricades in the mouth of tunnels from which the insects were pouring to join the swarm below. Quickly Red unstrapped his rifle, took careful aim, fired at a moving bulk in a tunnel mouth. The thing went still. I grabbed Doc by the shoulder and began to drag him up the stair, while Red crouched at the end, sniping at the things in the dark niches.

A hundred feet below, huge waves were surging about a tangled metal wreck, alive with green things that fought vainly for life, all attack forgotten.

Ten huge torrents dropped thundering from the shadows above, smashing at crumpled metal and crushed insect, beating the welter into foam. Red had scored another hit, a ray-tube burst in a flare of blue light. They had stopped raying us now, afraid for their lives as the walls crumbled into muck beneath them. Wherever a form moved, there a bullet spat evilly against the rock and there was no more motion.

Slowly we toiled up the wisp of metal that wound up and up into the hollow heart of the peak—up to the great cathode ray and the unseen things that guarded it. Slowly Red followed, covering our retreat. A sudden ray blazed, searing the stair between us. As the lower steps sagged, he launched upward in a mighty leap, wormed to safety, and fired at the niche from which the ray had come. A dim, half-seen shape squirmed erect with a queer, chirping cry—a thing seemingly unlike the things below, larger, differently shaped, more—human! Or was it a shadow-distorted insect, some larger, more advanced form, like the rulers of the termitary, that rose and toppled into the seething cauldron beneath?

The light of the place was fading, and our minds strained by fear and peril. Which did we see—master insect, different from his fellows as in the breeds of the termites and ants of Earth, or—something else—something far more terrible? We never knew.

UP, inch by inch, clutching wearily, weakly at the narrow railing, stumbling with heavy feet over too-low steps, with Doc half-creeping, half-carried at my side. Up endless feet, twenty, a hundred—toward the narrowing cone. Where the stair disappeared into the rock, I saw a great diaphragm like the iris of a camera stopping the opening to the summit of the peak. The stair vanished through a tiny hole in the rock beside it, disappeared into a pocket of black dark, where something stirred—new danger.

I screamed hoarsely to Red, the rifle barked, and a tube burst, fusing half the upper stair with its furious heat. As the stair sagged, I saw the freed diaphragm snap open with a mighty clang. Beyond lay the chamber of the ray!

For an instant, clinging to the tilted stair, we saw it, lit by the blinding glare of the great tube that perched high on jetty insulators. Into its base ran huge twisted cables, through it coursed a mighty, awful flame of loosed energy, dazzling electric blue and blinding white. Driving out from its blazing target of the grey metal poured a great shaft of shimmering luminescence—out into space—out to a dying Earth.

But in the wall of that little chamber in the peak was a great gap through which the sun poured its brilliance, revealing that which lay in the shadow of the tube. We saw a tiny form—a human being—battling bravely, fiercely for its life and the life of its race, struggling against things that numbed our comprehension—Moon-things of horrid leaping shadow—or were they insects, fearfully altered by a sportive evolution from the pattern of the hordes below?

For a single second of time the form ripped free, hurled off the figures vainly clamoring at him, and raced up the side of that gigantic pyramid of black that held the ray—up, up to the shimmering shaft that beat out into emptiness, to another world. For an instant it hung poised, weaponless, silhouetted against the mighty crystal sphere of leaping flame, then hurled itself straight as a dart for that fiery chaos. There came a roar of unleashed lightnings, a blaze as of the fires of Creation, a beating tempest of thin wind that strove to rip us from our narrow perch, and the summit of the mountain crumpled and fell, shattered, into the deathly silence that followed.

We found an exit, a tortuous hole through the wreckage that led us down again through those great rooms where once mighty mechanical giants had thundered the energy of death to Man. They bulked silent in the darkness, their driving power gone. No water flowed, no globes of light lit the cavern, no thin air circulated through the swiftly fouling corridors.

Somewhere, the insect-things gasped in death, or crept torpidly about using again the strange organs of life that evolution had given them in adaptation for the conditions of this barren waste. Somewhere, perhaps, those other, half-seen things lay still at last, masters or robots—God alone knows which. And not Tycho alone had died, but Copernicus, and Ptolemy, and those other great crater-cities that Man has never seen. For all the Moon fed its power, its very life, into the giant tube—that would strip a planet of its life in preparation for a new era of weird horrors.

In a way, I hope that life is not entirely gone from the Moon, for that would be a terrible price to pay, even though that self-same doom must otherwise have come to Earth. Dick would not have wished it, Dick who somehow came too late, or perhaps too early, to his destination. We who live can plan otherwise, now the deed is done and over, but its doing was none the less magnificent and worthy of a man of Earth—Richard Haverford, a Titan!

We did not wholly prevent the horror of the green death-dust on Earth. In a broad swath the ray had cut across Asia and half

of Europe, slaughtering millions outright and rendering millions more homeless in the storms that followed in its wake. The air of the world is rarer, noticeably so, and its pressure less, much as on a mountain-top; but many of the diseases of the lowlands are passing before the elixir of the rare, clean air.

The green dust of death remains, spread by the tempests over all the face of the globe, from Pole to Pole. No chemical has yet altered it, nor any of the weapons of physics, but men have much to learn, and when it is at last disrupted it may provide a source of the great energy poured into its making, so that the Moon will at last prolong life where it had once dealt death.

We may return to the Moon, or adventure to another planet—Doc, Red, and I. Others surely will. The rockets of the lunar races are there, and their great cities of machines and mighty underground system of communication raying out from their greatest cities. Man will certainly acquire their secrets, the secrets of a race that no man but one has truly seen, and that man dead. I think that we will again follow the call of space and lead the way for science. Dick would have done so.

THE END

The
"Quarterly"
Interplanetary
NUMBER

IT WAS A CHASE THROUGH INNUMERABLE WORLDS

for that unknown Master C-X that led three valliant men to
"The Scarlet Planet" (by Don H. Lemon)

where they encountered a civilization whose nature and customs defied the reason and imagination of man. Beautiful women vampires who died voluntarily by drowning and were immortalized in their tombs; half-human beasts; strange cities and stranger instruments of torture all mark this marvelous novel-length story.

RAY CUMMINGS

adds to the power of this issue by his intense drama of the conflict of three desperate humans fighting off the death of suffocation and starvation in interplanetary space. Adrift . . . alone . . . they struggled—in

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The strange concoction of a weird brain—multiple—is destined to play an important part in the lives of people. It spreads . . . engulfs . . . and leaves nothing to mark its path of ruin . . .

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"The Martian Nemesis" by George B. Beattie

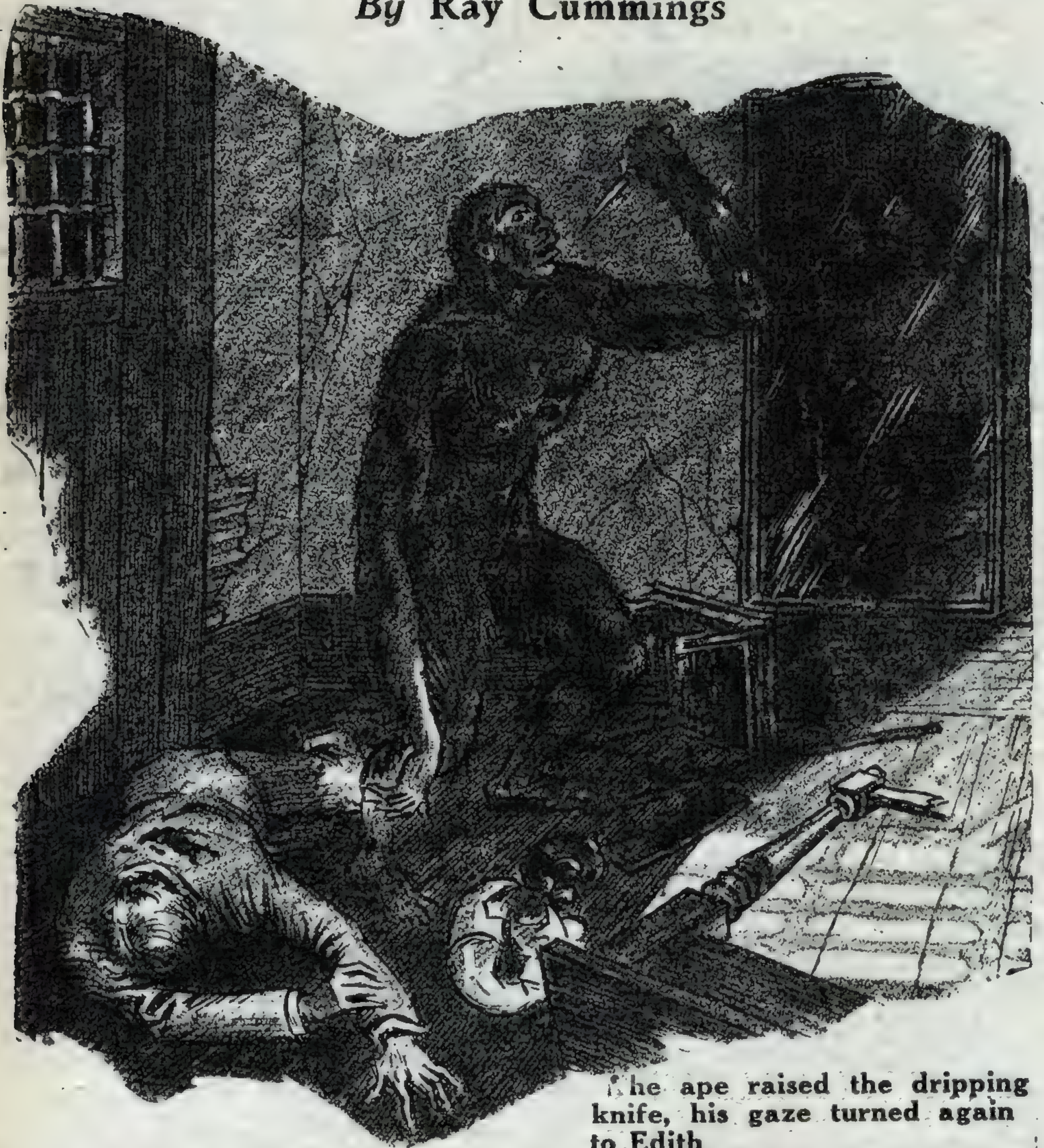
"Pithecanthropus Island" by I. R. Nathanson

AND OTHERS

ALL IN THE WINTER 1931 WONDER STORIES QUARTERLY
ON ALL NEWSSTANDS JANUARY 1, 1931

The Great Transformation

By Ray Cummings



He ape raised the dripping knife, his gaze turned again to Edith.....

THOSE who anticipate reading here a conventional tale of familiar type, cast in the mould accepted as fictional form had best pass by my few unimportant pages. I am not skilled in such craftsmanship. My chief told me once, when my report was made, that the affair should lie

in oblivion. Certainly I was not the one to write it in the guise of fiction. Nor was it suitable as fact for our audible newscasters for it would have aroused too much of doubt, suspicion and horror

Yet, I write it. For my own diversion, if you will; perhaps, with that morbid qual-

Illustrated
by Marchioni



*He thought he could interfere with nature's laws, and
change the work of a million years*

ity of the human mind which makes us like to dwell upon a horror . . .

My name is Georg Blake. I was, that summer of 1948, a novice news-gatherer for the London *Vocal-Times*. I was in the editing room of the Tower—a sultry August afternoon when the chief called me.

“What do you calculate out of this? Georg?”

An old-fashioned, type-script letter. He tossed it at me and I read it. Signed in ink, quaintly handwritten, “Dr. John K. Roberts.”

I had never heard of him. The letter set forth briefly that its writer was upon the eve of a medical experiment which would

be of great interest to the public; which might indeed prove of stupendous importance. He was (he wrote) a physician and surgeon retired now many years; a scientist who knew other scientists for the charlatans they really are. Hence, he desired no recognized scientific witnesses; his discovery would be given to the world through the medium of the public newscasters. If the *Times* cared to avail itself of the opportunity he would be glad to have it send a representative. Someone trustworthy; discreet; intelligent; preferably with at least some knowledge, or interest, in science.

My chief grinned as I handed him back

the letter. "That's you, Georg. You want to follow it up?"

A trickster, this fellow Roberts; this thing, some publicity trick. A charlatan, no doubt — himself, not all the other scientists in the world whom he so glibly, contemptuously accused . . .

I had anticipated from his letter that he would be an old man; but I was not prepared for the ancient aspect which was his. A man of eighty—or if he had told me a hundred I would have believed it. Yet there was about him—despite his shriveled frame, his palsied hands, his cracked senile voice—a sense of driving power. A personality vaguely sinister. I recall that at once I no longer thought him a mere trickster. And I feared him—feared, at least, this necromancy I was about to witness . . .

It was sundown when I arrived at the lonely little house set upon the edge of a moor . . . They had looked strangely at me when in the village I inquired for the place . . .

He had a daughter; I could have thought her his grand-daughter at the very least—a slim, pale girl of perhaps sixteen. He called her Edith. A somber girl queerly poised; a girl who have been beautiful without that mantle of apprehension which so obviously enwrapped her.

THEY entertained me at supper. We were four in that household; we three humans, and the ape . . .

We sat, after supper, in a small room which was the library. I had not yet seen the ape . . .

"There is," said the old man, "no quality of the human mind which differs essentially from that of the beast."

I had found him pleased to have me argue with him. "There is the soul," I said. "If you could call that a mental thing—"

"A birthright, young Blake. The soul is a heritage. Nothing mental, nor physical. Hah! you could call it spiritual as they do, and still not know what it meant. A heritage and a promise of futurity, nothing more. Science is not concerned with that—"

Ah, I can say now how great a fallacy he voiced!

"Science is not concerned with that, young Blake. We deal in tangibilities. The human mind works in thus and such a fashion. We humans reason with logic — because we have had the training — the evolution through millions of generations. We have

the qualities which now we call human because we have developed them. Respect for the property and life of others; desire for law; knowledge of justice—those things

ALTHOUGH science has changed our whole world in a wonderful manner, it is only a blind or foolish person who would say that the changes have not brought many evils. Man cannot interfere with the laws of nature without doing himself a great deal of harm even while he is improving his lot by great leaps and bounds.

Many of the broadest-visioned scientists are beginning to have grave doubts as to how far we should go in upsetting the "balances" of nature that have been built up over millions of years.

We wish to stimulate genius by means of work on our glands, we wish to transplant glands from monkeys to prolong our own bodily mechanism. Although these things may provide a temporary boon to us, their ultimate effect on the delicate mechanism that is our bodies is unknown. They perhaps start in motion some unknown forces, that may succeed in wrecking our nervous system.

Mr. Cummings had these dangers of modern science in his mind when he wrote this perfect gem of a story. He has poured into these pages all of his accumulated wisdom and keenness, and wrought his words into a picture whose sheer drama cannot be surpassed!

which raise some of us above the level of beasts."

"And we have the soul," I repeated.

"Yes. The consciousness of a Creator; the wonderment of the Hereafter; a philosophy which tries to envisage the universe and make it mean something. A mere ability to reason! We learned it in a million years of upward struggle; we give it to our children as a heritage, and we call it the soul. It is nothing but the quest for the unknown—"

He raised his skinny, palsied hand. He turned to the girl as she sat regarding him with her brooding dark eyes. Why, in those eyes of that girl I could see more than he said was the soul! Something—in your eyes as you read this, and in mine as I write—which no millions of generations could breed upward from the level of the beasts!

He appealed to the girl. "This young fellow would lead us into theosophy, Edith."

She said timidly, "I do not understand these things, father—these things you talk about so much—"

His sudden, cracked laughter made me shudder. Demented, this dotard! But he said very quietly, "Nor do I, Edith. You speak like a true agnostic. You do not understand, and you are too intelligent to blindly believe." He waved away the subject with a vehement gesture.

"I was saying, young Blake, the human mind is the mind of a beast who has been trained to think more clearly. The brain—do you know the difference between the mind and the brain?"

I stammered at his sudden question.

"The brain," he said, "is the physical mechanism by which the thinking is accomplished. A physical thing of cells and membranes and blood flowing through it, with sugar for the chemical energy to endow it with consciousness. Why, it is so

physical a thing that if for one second you stop the supply of sugar, consciousness vanishes The beasts have brains—one species a brain quite comparable to that of man—"

"The apes—"

"Exactly. The anthropoid apes, and we call them that because they so closely resemble mankind. An ape is only a man undeveloped—a man backward a million years, but still a man—"

The Divine Elixir

IT seemed to me that the girl was shuddering. I heard the sharp involuntary intake of her breath; she was half turned away so that I could not see her face.

"The brain of an ape, young Blake, is convoluted, like yours. The brain case, in some individuals is only slightly smaller—"

I sat, as the girl was sitting, and listened to his sacrilegious talk numbly. He had secured the brain of a man recently killed in an accident. A young man. Intelligent, of gentle birth and breeding. And he

had a living ape to whom now—tonight—he was about to give the qualities—the essence—of that human brain. To make the backward man we call an ape, a man of human, developed reasoning, like ourselves . . .

This thing, so horrible . . . His words, so cold and precise, hewing to scientific logic when every instinct within me denied them with revulsion. This horrible thing . . . But was it because I as the man, was revolted at taking the ape upon an equality with me? Was it mere vanity? Is that what makes us look with revulsion when they tell us we have ascended from the apes? Is it vanity causing us to endow ourselves with a soul—something intangible, not to be understood—to pander to our



RAY CUMMINGS

vanity so that we may say, "Ah, this at least I have, to make me superior to the beast—"

Is it my vanity—and yours—that makes us think we see in human eyes the light of the soul, something no beast could have?

I shuddered as he led me to the ape. I tried not to show it. I smiled. "You keep him—it—indoors?"

"Yes. He is very gentle. We have him in a room here—Edith feeds him. He likes Edith—"

Words, so horrible. He said, calmly, "I had my distillation ready this morning—"

My thoughts were flying far afield, but I strove to hold them on his words. At what we call death, he said, the conscious human brain ceases to function. The heart is stilled; the blood no longer flows. Yet the brain momentarily is unchanged. If the heart were again to beat—the lungs again to breathe, to cleanse the fouling blood—then the brain could function again.

There is no precise moment of death. It is gradual. With the ceasing of the functions, disintegration begins—a mere dissolution of the physical cells. He had obtained this human brain before the dissolution had progressed far enough to harm it. He had cleansed it; and by a process which he had over years perfected, had distilled from it an essence—an elixir—carrying, in a few drops of fluid, the living microscopic sperms which are man's heritage of Divinity . . .

Heresy! Blasphemy!

We passed through his laboratory. The room was unlighted, save by the shafts of moonlight that slanted in through its windows. The sashes were raised this hot summer night; the breath of the moor came in to mingle with the smell of chemicals . . . The old man paused his tottering step. The girl stood aside—slim white figure in the moonlight.

He fumbled at a shelf. "I have it here . . . Edith, have you the apple—" The girl clutched an apple in her hand—"he likes apples—" That sudden chuckle of a madman! "—he likes apples—"

He pressed us on through the dim laboratory. I saw that he was carrying a small

hypodermic syringe. He showed it to me, but I shrank away from it. This thing—infernal . . .

I stood silent while under a light he carefully filled the syringe. "I will inject this, young Blake, and in a few moments the living sperms will be absorbed into his blood—carried to his brain—to function in a moment . . . Have you a note-book? You are my witness—"

I steadied my voice. "You will have the ape—what he becomes, will prove—"

"Yes, of course. And you will recall, and testify what the ape was, before we endowed him. He is a beautiful physical specimen, just matured . . . Come, Edith—"

THE ape . . . He was in a small room at the end of the wing. The old man was carrying a blue vacuum lamp; its glow mingled with the silver shafts of the moonlight; it threw swaying shadows of us on the walls. We passed the length of a hall, and came where it ended, to a barred door. Edith unlatched it. She was the first to enter . . .

A small room on the ground level. Its rectangles of windows were crossed with metal bars. The moonlight cast monstrous patterns of the bars on the floor. There was a further door leading down a step to the ground. It stood open; I could see a small yard out there, enclosed with an iron cage.

Our front door from the corridor opened inward. We passed through—closed it after us; and put the lamp on a table. I noticed its glow reflected from a full length mirror on the wall behind me . . .

The ape . . . I saw it crouching in a corner on a litter of cloth. Frightened at us; shrinking back, but soothed by Edith's quiet words . . . The old man sat in a chair by the small wooden table; he laid the apple at the base of the lamp. There was another small chair; he waved me to it.

"Sit down. I want you to study him a moment . . . Edith, make him stand up so we can see him properly—he is really very gentle—"

I listened, with outward calm. I stared, trying not to shudder. This man—crouch-

ing here on his litter. Backward a million years, but nevertheless—a man . . . The old doctor's words were calmly precise, pedantic as though he were upon a lecturer's platform . . . These cold, calm details! . . .

This was, he said, a young male gorilla, family of *Simiidae*. I would notice the ample capacity of the brain case. I would observe that the supra-orbital skull ridges were not yet clearly defined. It would be evident to me also that in this youthful specimen the face bore a very close resemblance to man, since it had not yet attained its full brutality of expression. The canines had not developed fully; and the thickening of the skull, with its growth into crests and ridges, was not yet noticeable. The skeleton was the same as man's; the teeth, the same number; the shape of the jaw—not so curved as man, an angle on each side, with a canine tooth set at the apex of each angle . . .

Oh, the cold passion of science for detail! But what I saw was a thick black hairy body crouching in the shadowed room corner. A face, black of skin, with features cast in a mould to mock mankind . . .

The beast was chattering as Edith advanced upon it. "There, Timmy, don't be afraid—"

Its human name! Mockery!

The ape reared suddenly, and the girl retreated. Afraid? I could fancy so . . . I turned to eye the closed door behind us. The old man said, "We've got something nice for you, Timmy. An apple—you like apples—Edith, keep him back—"

The Great Transformation

SHE stood confronting the ape. "Wait, Timmy, keep back—Edith give it to you—"

Her very words and tone as though this great brute were a small helpless child . . . Grewsome . . . I know too, that the girl was revolted; forcing herself to this task. "Wait, Timmy—Father, shall I—shall I feed it to him now?"

"No. Presently—"

The ape stood nearly as high as a man. Thick bulging chest; great muscular arms

dangling to the middle of its shank. It took a step backward, walking upon the clenched knuckles of its feet. The moon fell upon its face. It was eyeing me, the stranger . . . And then I saw it stare into the mirror—staring at its own image; and then staring again at me.

I sat tense. Its gaze held me. Those dark pools of its eyes! What lay down in there? What thoughts? What gropings? Was this brute indeed a man? . . .

Its gaze turned to Edith. Did I see it soften? I thought so . . . The ape relaxed. It sat down suddenly upon its litter, crouching in an attitude horribly human.

The old man held up the apple. "See Timmy? Look what's for you."

The black lips bared the pointed teeth. Travesty of a human smile!

The old man drew from his pocket a long clasp-knife. He opened its blade; he cut the apple into quarters.

"Here, Edith—give it to him."

He laid the knife, still opened, by the lamp-base. I recall that, clearly. But at the time I scarcely heeded it. My heart was pounding, seeming almost to smother me . . . Edith's face was white as the moonlight as she came and took the pieces of apple.

"You're sure—father—"

I heard myself murmur, "Had we better not—wait outside?"

"Fools! He is very gentle—like a child. Soon he will be a man—like us! A kindly—man. Amazed, no doubt, to realize himself . . . Sit still, young Blake—"

Ah, I was as irrational as both these other humans to have been there! A confusion was on me. I sat transfixed.

The ape was grinning. Pleased with anticipation of this coming delicacy. It stretched out a thick hairy arm and took the segment of apple. It was absorbed in eating; and the old man, mustering courage, held its forearm; punctured its thick insensitive skin; injected the fluid into its veins.

The room was very silent. Black and white with the shadows and patches of moonlight; and a glow by the table from

the lamp, where now the old doctor and I sat watching.

Edith stood back against the wall; her slim white figure was blurred in a shadow. Moonlight lay upon the ape. It sat gobbling its morsel like a pleased child. It finished; and stretched out its arm again . . .

"Give it another, Edith—"

She handed it the rest of the apple. We were waiting for the injected fluid to take effect.

Heresy . . . Blasphemers, all of us . . .

But of course nothing would happen. We would wait, and this old madman would be chagrined; this poor terrified girl would be relieved; and I would go back and my chief would laugh . . .

A minute passed. Or an hour? I could not say. The ape had long ago finished the apple. Edith was standing back again, away from it . . .

The ape sat crouching. We sat like carved statues, waiting . . . Nothing—would—happen—that injected fluid would not take effect . . . Nothing would happen . . .

But there *was* something. What was this? Nothing—

But the ape suddenly was trembling. Crouching; and then it passed a shaking hand across its black forehead, as though dazed.

A terror swept me, but I could not move. What horrible thing was this? With that one simple gesture of the ape's, it seemed to me that everything was changed. This black hairy beast—or was that a man, imprisoned there in that thick, powerful body? A man, dazed, confused, frightened . . .

The ape hitched, shuffled on its litter, and slowly reared up on its hind legs. Stood with long, dangling arms; stood swaying as though dizzy . . . Its fists were tight . . .

A panic must have swept us. I heard Edith give a sharp, horrified cry. The old doctor shoved back his chair. I stood up sharply; my chair overturned with a crash.

An instant. The ape's gaze was roving; the narrow black forehead was wrinkled in a frown. It stared at its mirrored reflection. It was puzzled. It held out an arm as though regarding it; and lowered its head to gaze

at its hairy flanks. Puzzled . . . And then it turned to stare at Edith . . .

A moment . . . All its muscles tensed. It leaped. But not at the girl; leaped for this table beside which, frozen with horror I was standing. The hairy body struck me, and struck the table. I was flung back, scrambling. The table and lamp crashed. The lamp was extinguished. But in the moonlight, suddenly vivid, I saw the ape's hand holding the knife which it had leaped to seize. The old doctor screamed—a long, shuddering last scream. He was fumbling at the door; and the scream died in a gurgle as he fell with the knife buried in his back.

I do not know what I may have shouted, or what I did. The wizened body of the old man blocked the door. The ape stood again with the knife—dripping crimson now—upraised . . .

I found myself in the center of the room with Edith clutching at me; my arms around her—the ape advancing upon us . . .

A second. Oh, there can be an eternity crowded into a single second of terror! Whirling thoughts. Things horrible, to be seen in a second . . .

I stared for that single second across a patch of moonlight, into the eyes of the ape. And there were many things I saw. . . My frightened fancy, if you will. Yes! Call it that . . .

The ape's black lips were mouthing with words it could not form. And I saw, back in those eyes of the beast, things that should not have been there. A soul? Something human. A human realization. A man—the consciousness of a man, tortured with realization. A man, imprisoned in the body of the beast—suddenly realizing . . . And gazing at me, and at Edith—the woman. Realizing with horror, and despair . . . And acting with desperate frenzy. But not the acts of a beast! The acts of a man—despairing, irrational with his sudden horror . . . He had murdered the old doctor who had brought this upon him . . . And perhaps, too, an all-wise Creator was stamping out this necromancy.

The ape raised the dripping knife. It seemed, in that second, as though with the eyeballs of a beast but the look of a man,

his gaze turned again to Edith—the woman.
And softened—wistful . . .

The knife-blade plunged down into the
bulging black chest. Not the act of a beast!
A suicide . . .

The monstrous body of the ape fell at
our feet; writhed and lay still; lay in a
patch of moonlight on the floor, with a
black pattern of the window-bars crossed
upon it.

THE END.

FOR THE MARCH ISSUE

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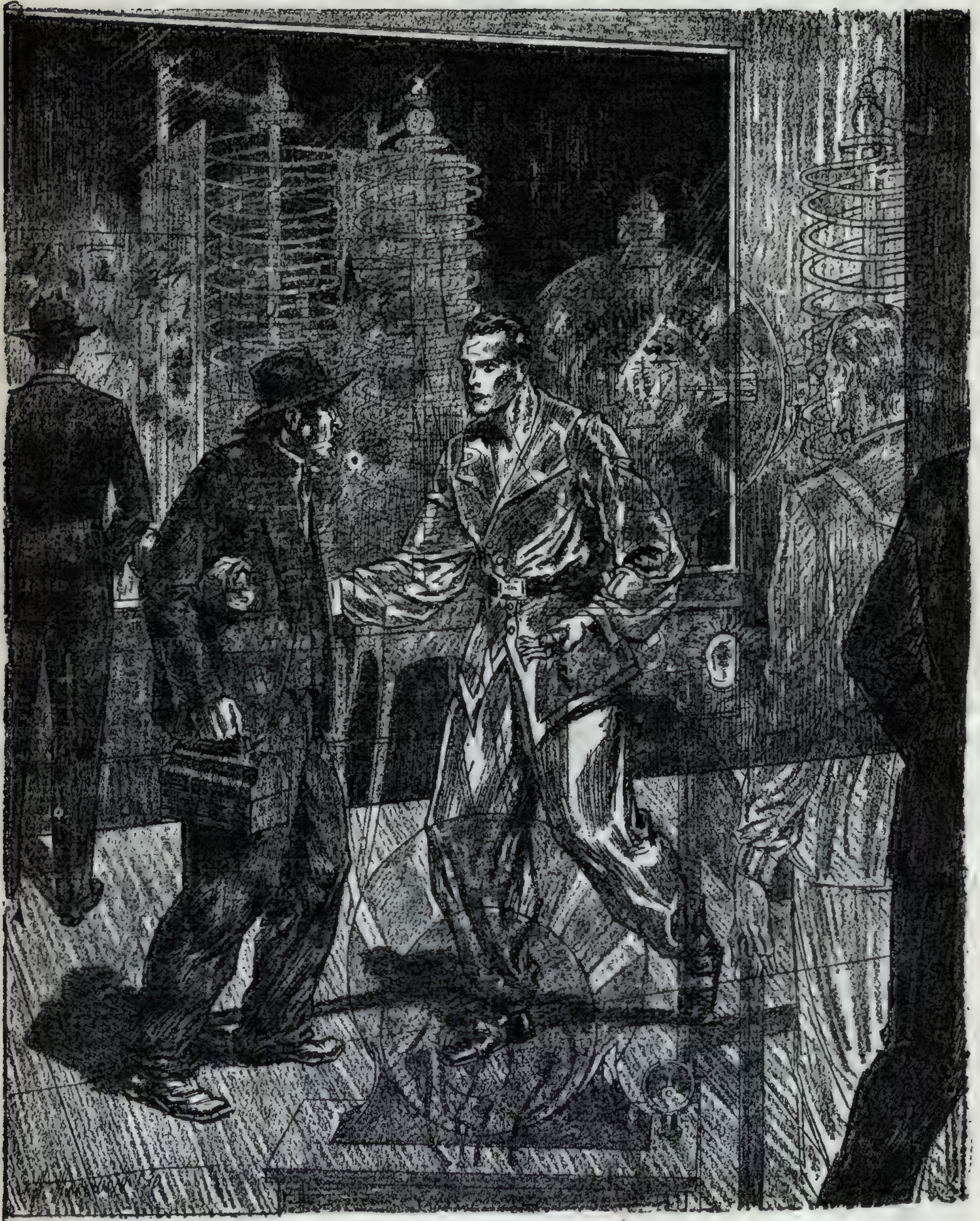
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AND OTHER STORIES AND "WONDER" FEATURES

IN THE MARCH ISSUE

A Flight into Time

By Robert H. Wilson



(Illustrated by Marchioni)

He rose and found himself grasping an arm—a prosaic 20th century arm. He had returned!

I SUPPOSE it had to be Storrs—or another impractical artist like him. If the thing had happened to Edison, or Millikan, or any of a half dozen others, think what

we might have learned! Even if it had been one of the rest of our crowd standing on that street corner . . .

But it was Fate, giving with one hand and taking back with the other, that vouchsafed to Ted Storrs the "Vision". We have to piece it together as best we can from what he noticed and remembered.

He was standing at the foot of Market Street, where the gold-topped Ferry Building is silhouetted against San Francisco Bay and the Oakland shore. Around him was the press and rush of the noon crowd, the clatter of street cars and the whistles of policemen directing traffic. It was the twenty-ninth of September, 1933—that much is sure, for we were going over to Berkeley that afternoon to see the first football game of the season—and the hour, according to Ted, was exactly noon. Waiting for the rest of us to show up, he had stopped to set his watch by the Ferry Building clock. Just twelve, it was, the two hands straight together, and as Ted matched his watch with them, he let the second hand touch sixty before snapping in the stem.

"May I bother you for the time?" came

a voice, "I've let my watch get hours slow."

"Certainly," Ted obliged without half thinking, holding out his own timepiece at the end of its chain.

TIME is but a stream says the modern scientist, and if we could get out of the stream for a moment, we could project ourselves into another part of it and therefore actually travel in time.

Or, as Einstein said, space is curved; and since time and space are sister and brother, it may well be that time itself is curved, perhaps into some higher dimension. In that case also time traveling should be possible if the proper apparatus can be developed.

No doubt the traveler into the future will see and experience things beyond all imagining. But what of his own feelings about them? Suppose he were to find himself in a veritable Utopia. Would he wish to stay on and enjoy it? Would he find himself at home with people of that new day and age? Might it not happen that among his own race, even among his own descendants, he will find himself a stranger, and that he will have such an overpowering home-sickness for the dirty, drab, and muddled atmosphere of the 1930's that he would feel he must go back? Mr. Wilson answers some of these questions in this intensely realistic and exciting story.

The inquirer was an oldish man, with white hair and beard calling to Ted's mind a Confederate General. His shirt collar was open and without a tie, and his ensemble was a variety of heavy silk loose fitting garments, resembling, Ted thought humorously, pajamas. And his watch, on which Ted's attention had unconsciously focussed—a watch strangely wafer-thin—was marked unmistakably with ten hours and a hundred minutes.

It was that, together with the silence suddenly striking his ears as few noises could have done, that caused Ted to look around.

What he saw made him gasp. Almost directly above his head hung a mammoth suspension bridge stretching far out to the east and across the Bay. Behind him, a Market Street five times as wide as before was dwarfed into a narrow canyon by pyramidal skyscrapers stunning in the mass of their bases, dizzying in their pointed heights. Along the street, along airy

causeways swung between the buildings, sped myriad vehicles that in the distance were but hastening dots. Through the air, and swooping down now and then under one

of the bridges, wingless, torpedo-shaped, silvery vessels were sailing. And all in such perfect silence that you could hear the breeze sweeping in off the bay.

The glorious white and silver of the buildings, with their window crystal and roof-garden green; the gigantic, unearthly beauty of the picture, held Storrs for a moment. His art is by no means altogether an excuse from working. Then his mind recovered from the first paralyzing impression, and he turned back to the man with the strange watch.

"Would you mind telling *me*," he began, "just where and"—for the thing, incredible as it was, had begun to dawn upon him—"and *when* I am?"

The man, who had started to walk away without ever really looking at Storrs, was nonplussed. "If you want to know the street—?"

"Hang the street! Is this San Francisco?"

"Yes, certainly."

"Then what year is it?"

"Why, eighty—, twenty-one eighty-nine."

"You mean—? And your clothes aren't right."

THEY stood staring at each other.

"I mean that five minutes ago, by my watch, I was standing on this same corner in the year 1933, and now you tell me it's two hundred and fifty years later. The thing's nonsense."

"Not at all. Time motion is a theoretical possibility, though the chance of its working is far less than that of your being an impostor. Let's see." He pulled on a pair of glasses. "Your clothes seem to fit the date. Your watch is a museum piece—the mechanical type went out a century ago. Still, you might have got hold of one."

This view of the impossibility was too much for Ted. "Look here, if you think I'm lying, what about this?" He pulled out the day's newspaper from his pocket, and

shoved it in the old fellow's face.

As the man looked at the fresh ink and fingered the texture of the paper, he seemed more convinced, and a pocketful of "ancient" coins and bills completed his conversion. "We'll have just one more test, and then I'll believe you. But I never really thought it could happen, certainly not in front of me." Then, growing conscious of an omission, "My name is Rodgers. I'm sorry to have treated you the way I did, but the thing shocked me too."

Walking still a little dazed, Storrs followed Rodgers down the elevated sidewalk on which they had been standing. They rounded the corner and entered a small, brilliantly sunlit office. In spite of the attractive appearance of the place, it was a police station, with a sergeant at the desk in white uniform and gold braid who took Ted's fingerprints, then motioned him to a bench and watched him sternly while Rodgers and a higher officer carried the sheet into an inner room.

Ted's thoughts, such as he can remember them, were highly confused. Once away from the actual sight

of this new San Francisco, his disbelief in the reality of his experience increased. He must at least be dreaming, and he tried several times to pull himself awake. He played a little with the idea that he was mad. Then as time dragged on, the very prosaic reality of the station-house showed how far from fantasy was his plight.

He spent at least five minutes in the effort to shift his position unobtrusively so as to gain a reflection of himself in the curtained glass inner door, and thus settle the feeling growing upon him that after such a long time his hair was bleached white and his face shrunken beyond recognizability. He was almost ready to risk a reprimand



ROBERT H. WILSON

and walk over, when the door opened, giving him a fleeting but perfectly normal image of himself—Rodgers stepped out.

"It's all right now, Mr. Storrs." He had a slightly chastened look from his communications with the higher powers. "But you see, we had to be suspicious. There's rather a big prize out for the first man to achieve motion in time, and a number of fakers have appeared. However, we just got a check on your fingerprints, and they aren't those of anyone on earth fifty years ago or born since. Though you'll probably be ruled out of the money because your experience was involuntary, the Committee will want to see you as soon as it can assemble. Meanwhile, I am deputized to make you their guest and mine."

He took Storrs by the arm, and led him out into the bright street again. So it was true. Somehow, he had got into the year—what was it? 2189. Ted had less difficulty in believing it than more workaday people, and he followed willingly enough into the rest of his strange adventure.

The walk gave him a chance to get his bearings further. Diverting his mind from the maddening problem of how his transfer in time had been accomplished, he began to pay more attention to his surroundings. The buildings, huge even to his first glance at a distance, became positively monstrous at close range. The base of one would cover a whole block, and the upward-glancing eye could not take in all at once a single vast front. Only from far off could he comprehend their roughly pyramidal shape, with continual broad set-backs.

But especially in the less strictly business district, the green of roof-gardens on all these flat surfaces called to mind far more the Hanging Gardens of Babylon than Egypt's dead piles. And although the general plan of each building was the same, there were subtle differences—number and depth of set-backs, straight angle or varying curves of upward slope—that saved the effect from monotony. Instead the whole city, Ted declares, had an indefinable, multi-dimensional symmetry that was strangely beautiful, giving the effect of an elaborately planned design.

A Magic City

THE route Rodgers took led, for its first part, along the broad sidewalk, level with the show windows of the buildings. It was a dozen feet above the street level proper, and constituted a first, though comparatively narrow, setback. Continuing in its same width, it passed in bridges between every two blocks, leading foot passengers directly and safely above the traffic. The vehicles, most of them, were a sort of glorification of the "cut-downs" of present-day college boys: small, low-slung, with a sort of rakish beauty. Though they swept down Market Street twelve abreast, there was no odor of exhaust from them in the air. They moved in almost total silence: even from the bridges directly over them, all Ted could hear was a faint hum of their many motors, and a slight swishing of tires.

Then, as Storrs and his conductor turned to their left, a huge escalator carried them up to a new level. Just above a vehicular way, a somewhat narrower path, and wide-leaping bridges, made a road for them more than halfway up the buildings' sides. The sky was visible now in its whole spherical shape, and the wind swept along, whistling in the wires of the guide rails. Here pedestrians were fewer, and perhaps this very fact drew Ted's conscious attention to them, just as here and there they began to slow down from brisk walking to notice him in his antique attire.

In spite of the wind, the direct sun was warm, and clothes could be as scanty as taste prescribed. Among the men, the pajamas similar to those of Rodgers were decidedly predominant, although there were sometimes a sort of riding-breeches in military-looking uniforms. Coats, if present at all, were of a light blazer type, or of loose flannel again. By the unbreakable tradition of a thousand years, women still wore skirts. But they were far above the knee—cloaks being worn for protection if needed—and above the top of light buskins touching the calf of the leg, stockings were unknown. Some women's hair was bobbed, others' long and put up; that of a few, caught back, fell down to their shoulders. Ted does

not remember seeing a single hat on either sex. Both women and men wore bright colors, and yet in the large it was a note of soft, creamy white that predominated.

All this last part of the way, Rodgers seemed abstracted, absorbed in his own interrupted thoughts, and almost forgetting his guest. Even when they had turned off to one of the buildings, and left the set-back garden for his apartment, he was silent. Ted tried to seem as preoccupied, examining the room intently, but his inspection was only forced and he remembers practically nothing. Furnishings are very much alike in all periods, except to their *amateurs*. Aside from a passing interest in the silent clock, apparently run by chemical or radioactive means like Rogers' watch, there was only one thing that claimed his attention.

This was a picture on the mantel above the electric fireplace with its resistance coils: a nude, and apparently a photograph, though in color and with a three-dimensional quality more to be expected in hand work. The subject, a girl with straight body and soft, short brown hair, was really beautiful, and made doubly so by the treatment. In profile with one arm outstretched, she stood against a billowing rose-colored mist where faint silver arabesques seemed almost to move, and which brought out in strong contrast the coral and white of her skin. The blending of real and fantastic, of the solid and the tenuous, was perfect. The thing was a work of art, and Ted, who ordinarily scorns photographs, had to share his enthusiasm.

"A marvelous picture, there," he declared, as his host came up beside him.

"My daughter," said Rodgers, in his voice only pride and not a trace of resentment, "my daughter Anne."

STORRS met Anne herself at dinner. Her dress, blue like her eyes, was a clinging silken wisp, sleeveless, and falling but a little below her hips like a Grecian tunic. Her bare feet were in soft, jewelled sandals, and there were diamonds in the silver net over her hair. "Synthetic," she explained to him later, and the jewels were as cheap as glass, but they had all the

sparkle and beauty of natural gems.

"Mr. Storrs, who has got to us somehow from the year 1933," Rodgers introduced him to his daughter. Her handclasp was firm, like a boy's. The old man seemed relieved at the presence of a third person, and transferred to Anne the none too easy task of finding subjects of conversation with the strange visitor. Before the meal was over, he excused himself: "Terribly sorry—have to unload a new shipment at the Museum—my daughter—home on her vacation—take care of you."

Except at meals, and on a few necessary occasions, Ted never saw Rodgers again during his stay in Anno 2189.

"Dad's an old dear," Anne explained, "but he's simply too absorbed in his Early Twenty-First Century. If you had arrived here from a hundred years later, he would have monopolized you utterly." She laughed.

CHAPTER II

A Visitor from Venus

THEY sat across the table from each other, finishing an ice whose refreshing flavor was strange to Ted, coming apparently from some new fruit. The meal, served from the common kitchen of the building, had been full of such new vegetable compounds, completely replacing meat. As the sky turned grey through the casement windows, Anne leaned over and switched on the light: three tubes overhead, arranged in a triangle, that glowed like molten silver and gave out a pure white, soft radiance. Storrs thinks, now we bring it to his mind, that this universal source of illumination was almost wholly without heat, but he did not notice particularly, and cannot be sure. And then suddenly, as they were about to rise, a blinding purple beam flashed in the window. It was gone in an instant, but only after another did Ted's eyes recover from the brilliance.

"I thought so," declared Anne, springing to her feet. "The Venus Accommodation is overdue again. Let's find out what's the matter." Without waiting for a reply she dashed out into the hall, snatching a cloak about her. Ted followed, a little dazed.

It was hard to keep up with her as she hurried ahead, running along the narrow bridges hung over darkness. Then an imposing gateway, where she showed a pass to gain admittance, an elevator shooting up at breakneck speed, and they came out upon a vast landing field in the midst of the city. It was blocks square, resting upon the tops of buildings. From a tower at its center flashed the great purple searchlights beams. A dozen ships hovered and wheeled above it, maneuvering for a landing, and more were rising.

Anne left Storrs in the crowd at the edge, behind a railing barring the field proper. It was his first chance to examine the interplanetary and air vessels at anything like close quarters. The latter were torpedo-shaped, and except for small stabilizing and steering fins at the sides bore no trace of wings. Instead, while propellers at their noses provided forward power, lift was obtained directly from big helicopter screws along the top. The blades were larger than those of the propellers, spiralling in row upon row around their shafts. They seemed more than a little flexible, and made a flapping noise at low speed. They could float a vessel at any chosen height, and three sets of them lifted bodily into the air a ship as big as a Pullman car.

Smaller, speedier machines, with their steering fins at wide angles and their helicopters slanted forward, put up their noses and used their propellers to gain height more quickly. In the purple light, darting here and there or hovering almost motionless, they seemed to Storrs the most incredible things that he had ever seen.

When Anne returned, she had the explanation of delay. "Number Three ship again. The other two got through the squall on coming into the atmosphere but the man let it come down too abruptly and twisted a wing, which threw him off his course. He even lost the radio beam, and had to limp back to it on his batteries. And then, hoping to speed up later and hide his fault, he didn't radio that things were all right. This makes the second time; no more interplanetary flying for him. He'll be in any minute now."

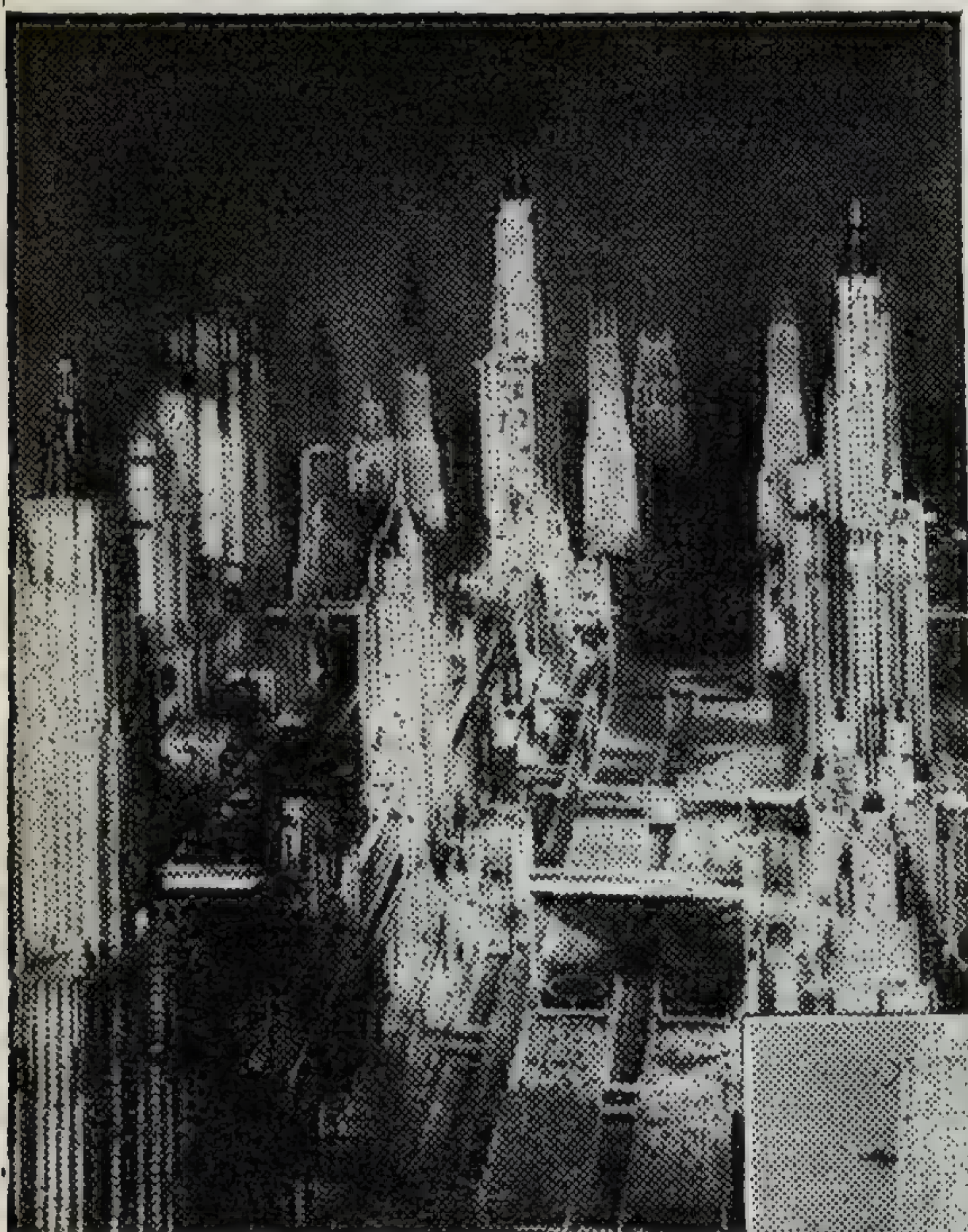
It was true. The searchlights had been turned horizontally to the west. Their purple beams sheared straight through the growing mountain of fog. In another instant, there became visible in the heart of the cloud the approaching flyer and the dots of its escorts. Even far in the distance it gave the impression of size, and as it hurtled toward them its apparent dimensions increased.

In an incredibly short time it was bulking overhead, large as a good-sized steamboat. Its shape was that of two torpedoes lashed together sideways, giving it a big, blunt front. Its rocket tubes were silent now as it glided in—the great wings supporting it. Almost directly above Ted, so that he had to crane his neck to see it, the ship came to a dead stop with the drag of a small braking screw in the tail. Immense, solid, five hundred feet up, it seemed about to fall and crush everything in a great cataclysm. Ted took a step backward.

INSTEAD, it seemed to descend slowly, almost imperceptibly, to the stretch of field cleared for it. Its passengers—Ted could see them easily through the windows: yellow-faced Venusians and returning Americans—were undisturbedly pulling on their coats. In their faces he could see a little annoyance, but no trace of fright, at the experience of their voyage. The ship had scarcely alighted (on row after row of big rollers, projecting but an inch or two from its bottom) when they were swarming down the companionways dropped from its side. In fifteen minutes the vessel was empty, and with a gang of overalled workmen steering it along, its brake propeller towed it backward into a shed.

And then, more to make conversation than from any of the scientific curiosity that should have been gripping him, Storrs asked the one intelligent leading question of his stay in the future: "I gathered from what you said that aside from rockets these ships have electric power. Just how do they manage it?"

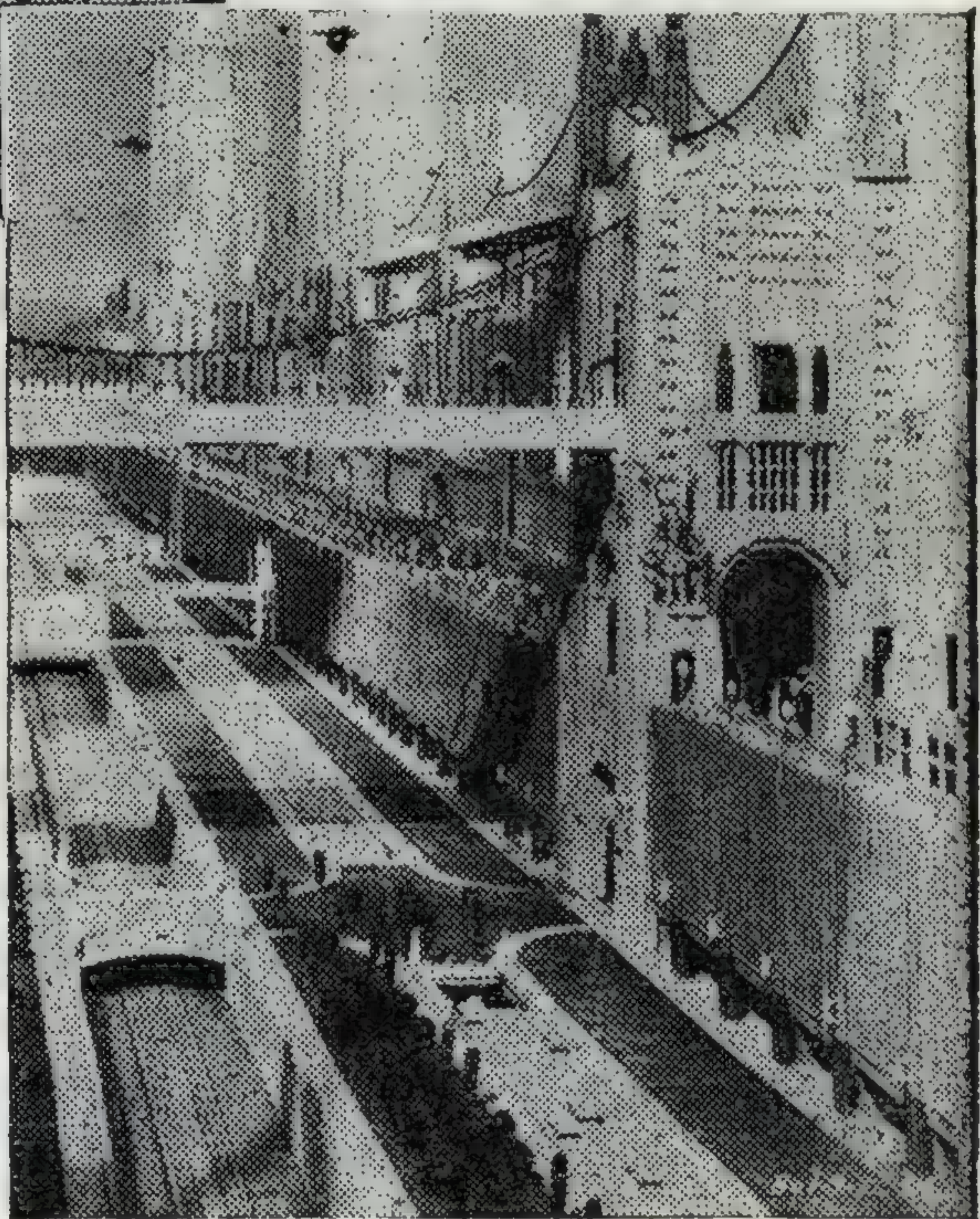
Anne's reply, made with all the sketchiness of one so familiar with her subject that she cannot appreciate her hearer's ignorance,



Two views of the city of the future, in which Ted Storrs found himself. The upper picture shows a bird's eye view of the great canyon of gigantic skyscrapers, the little dots representing new style surface cars. The various levels of traffic are shown with suspension bridges connecting the mammoth buildings.

The lower picture is a close up view of one of the traffic levels, the surface cars in the lower center of the view disappearing into the black mouth of a tunnel.

These photos are of an actual model of the city of the future, and represent a scene from *Just Imagine*, a Fox Movietone production, which had its premiere at the Roxy Theatre, New York on November 21. Copyright 1930 Fox Film Corporation.



heard and remembered as sketchily by a casual and unscientific mind, is yet—and perhaps, a little, just because of its vagueness—one of the most fascinating parts of Ted's story. I give it here, all he told us at first and all he has managed to remember in response to questioning, the hopelessly brief and tantalizingly suggestive outline of the foundations of a new world:

Practically all the power of 2189 was—or should I say will be—electrical, and in origin sub-atomic. Common earth, mined in quantities so small, relatively, as to give no effect of eating up the ground beneath one's feet, was so treated that its mass was transformed almost wholly into energy, and gave up that energy in electrical form. The process was not so much secret as so complex and delicately involved as to be incomprehensible to any-

one but a small group of super-trained minds—of whom Anne frankly admitted she was not one. Power so generated was incredibly cheap. Ted did not dream of getting figures, and without knowledge of currency basis and price levels they might be worthless. But suffice it that the use of labor-saving devices was limited only by the

proficiency, and not the efficiency, of their design.

Moreover, this power was supplied to all freely moving vehicles—airships, seagoing vessels, automobiles as well as interplanetary flyers—and to substations in places too small for generators, by a system of radio transmission. The method made use of an involved combination of inductance and capacity effects, of electrostatic and electromagnetic principles, to fill the ether, not with waves eternally broadcast, but with lines of force tapped only when, and for as much power as needed. A network of transmitters kept up a concentration over all civilized lands and great beams were laid along the coasts and the transportation routes over ocean or waste.

For journeys to Mars or Venus—the flyer was transmitted over a gigantically powerful beam—rockets being used as auxiliary power. But that is so distressing in that Ted gave us just about enough information to meet our curiosity without explaining how things worked.

All this Storrs had explained to him on that huge, eerily purple-lit landing stage. It does not seem to have impressed him as much as it should. It was only when they were walking home, in the cool night, over the airy bridges, and Anne, systematically bringing her discussion back to its starting point, was explaining the aircraft safety devices—higher possible speed for the motors of uninjured screws; separate power supply circuits for each helicopter and propeller; emergency storage batteries of radioactive gold which could keep the heaviest vessel running for hours—that he even realized the perhaps unusual extent of her knowledge.

"Miss Rodgers, have you studied up on these things?" he asked.

"Studied up?" she laughed. "Well, once. I work as pilot on the Polar Special to Moscow."

As I have said, Storrs had less trouble believing his situation than would have some of the rest of us. His mind simply refused to grasp the incredibility—I had almost said the impossibility—of it all. Besides, when one has actually experienced a thing, the

evidence of the senses is highly conclusive. Still even Ted, when he wakened the next morning, was much inclined to count the whole thing a dream. He lay in bed, he says, for fully fifteen minutes, burrowing under the covers to escape the sunlight, fully satisfied than when he chose to look around he would find himself in his own room.

Sport in 2189

IT was a voice that called him out of somnolence, and brought him back to the reality of his trip to the future. "Good-morning, Mister 1933. Like to play some tennis?" Anne's head peered around his half-opened door.

"Betcher life," Ted replied, realizing as soon as he had spoken that the slang would be as antique as "ods bodikins" today.

"I don't know what that is but here are some things. Catch."

The "things" landed squarely in Ted's face. They proved rather less than the equivalent of a modern track suit, and he donned them with a little hesitation, thinking that something had perhaps been omitted. At breakfast, however, Anne was wearing very much the same costume: abbreviated "shorts", and a mannish shirt with brief sleeves and throat open in a deep V, both of silky white. Mr. Rodgers was just finishing his meal as Ted entered. Beyond a perfunctory greeting, and a good-bye kiss to his daughter as he departed for the Museum, he paid no attention to either of them.

When they arrived at the tennis court, out on one of the broad setback areas of the building, there were half a dozen other young people playing and waiting. "Mr. Ted Storrs, one of our ancestors," Anne introduced him to them. They were greatly entertained by his account, which half of them doubtlessly believed to be humorously fictitious, of his marvelous leap to their era.

The court, a pleasant, creamy brown, was constructed of a springy composition very easy on the feet. The dimensions seemed the same as those of today—although Ted who would never think of pacing them off.

reports that the service line looked a little farther back. The rackets likewise had a normal appearance, although cast in one piece out of some sort of condensation product with a marked "whip". Strings were opaque. The balls, while keeping the traditional white, had no covers. Their surface, instead, possessed an inherent roughness that never wore off—the result, it was explained to Ted, of the constant breaking open of bubbles in the rubber sponge—and that gave such friction as to permit the cutting of all but the hardest balls played. The rules and scoring had not been modified by two hundred and fifty years, except for the abolition of the second chance at service.

But if the external character of the game was not greatly changed, the play itself had been marvellously improved. Speed, hairbreadth accuracy of placement, service that broke like baseball pitching, all testified to centuries of scientific study. And these, as Anne confessed, were far from championship players. Yet one girl, especially—her name was Margaret, and she wore what would pass for a modern bathing suit with dark blue trunks and white top, while a ribbon of flexible copper held back her auburn hair—had a game that not only outclassed all the men present, but would even, Ted insists, make serious trouble for Tilden or LaCoste.

Before the morning's play was half over, seemingly bothered at its restriction, she had yanked off the shirt of her suit. Her bronzed torso, as she swung into dazzling service or drives, made Ted think of a boxer's, though without any masculine suggestion.

A clock somewhere had just struck nine (10:48, it would be, in our time) when Anne suggested a swim. The crowd followed her to a man as she ran off along a path through potted shrubbery. Putting all his force into it, Ted was glad to find that in this exercise of pure strength he could catch up to her, could have passed her. They reached the pool together. The water was smooth and clear, with a marble rim and a strip of grass around it. It was shut off from the sun by the mass of the

building. Anne raced straight for the edge. Lagging behind a little, Ted watched her as she pulled the garments from her sweat-gleaming body, stood poised white and naked. Overhead, between the spans of two bridges, a silvery airship hung glittering in the sky.

Then she had plunged into the blue-green, limpid water. The others hurried up, shouting noisily, some having thrown off half their clothes as they ran. One girl, stooping too near the edge to untie her shoes was shoved in fully dressed. Those already swimming splashed up at the others. "Come on in, the water's fine." That banal conjuration, Ted reflected, must have now all the connotations of quaint antiquity.

CHAPTER III

A Perilous Age

THE water was cool as Ted stripped and plunged in, the rush of it along the skin refreshing to his hot body. He swam until he was tired—the easy, almost mechanical stroke of the others carried them at racing speed without apparent drain on their energy—then stretched himself out on the grass to dry. From there, he could see that much of the new effortless speed came from a strange twisting thrash of the legs, together with a careful exactitude of arm movements that looked the result of mathematical study.

But what most engrossed Ted's attention was the picture before him, the flashing bodies of various shades of brown—some of the women's were a light, creamy tan in spite of all their exposure—and their greenish glimmer beneath the water; the white background of the building, with its great mass towering overhead. His fingers itched, he says, for a brush. It came over him too, a little, lying there, that besides the material spotlessness he had noticed in the new San Francisco, there must be a spiritual cleanness about this civilization to permit of such glorious nakedness.

That afternoon, Anne took him to see the sights. Her car, occupying an exceedingly small space in the apartment garage on a

level with one of the vehicular causeways, was a snug fit for the two of them. The machine ran from radio power with a silent electric motor, and although steering was done as at present, a small panel of push-buttons along the inside of the wheel controlled speed, transmission, and ordinary braking. Traffic in the streets and on the higher levels was fairly easy, facilitated both by the small size of the vehicles and, as Anne explained, by a housing system which so far as possible incorporated a factory, the apartment residences of its employees, and a complement of retail stores, in a single great building.

Riding mostly in the streets proper, although at times climbing long inclines to the upper causeways, they visited the great manufactories of the city; the foundries where out of common earth was extracted the aluminum used in the alloys, incredibly light and strong, that had taken almost completely the place of steel; the textile mills where automatic machinery spun its own synthetic threads and wove them into the finished product almost without human intervention, where a huge loom furnished a single canvas for an artist-workman to vary constantly the colors and patterns as they came forth; the generating plants where, looking guardedly through solid feet of filter glass, they could see matter, as it disappeared in a seething flame, giving up the energy that ran the wheels of this new civilization. They went to a number of public buildings, auditoriums, libraries, museums—Ted noticed, in passing, a 1933 airplane among the exhibitions—buildings beautiful in their long straight lines and great, light-filled spaces. It was late afternoon when they came to the Cathedral.

The marble pile, cruciform at its base, rose by scarcely perceptible set-backs in a single spire that towered almost twice as high as the other buildings. Within, its architecture was such a glorification of the girder, as had been Gothic, of that equally mechanical device of the pointed arch: an airy tracery that yet carried the suggestion of the mass it supported. The lines of the place carried the eye upward, up to the great cross-beams where people walked,

dwarfed almost to nothingness before the majesty of the House of God; up to where windows that were solid jewels made of the slanting sunlight a rainbow mist; up and up to a luminous infinity that the eye could touch at but could not grasp.

For a minute, Ted stood looking at it. Then Anne drew him off to one side, in a corner of the transept where they could be undisturbed. Her voice was low, befitting the silence of the holy place, when she spoke:

"I brought you here, for the last place, to show you and tell you a great truth. We could not have you stay here, or go back to your own time, thinking that our material achievements are the heart and height of our civilization. That was the world's ideal once and by that it nearly called down its own ruin.

"IT had been a rich world, that early twenty-first century whose garish relics Dad collects so carefully, until in its love and fear of war, its use and misuse of science, it had built up huge populations that threatened the very food supply and made food sources a cause of conflict. It was an ugly world, so full of blind toil and hectic amusement that man almost desired the relief of strife. It was a cruel world, with God and good forgotten in materialism, with exploitation and crime rampant in every land, and with the two great confederations of the East and West eyeing each other across the Pacific and the Russian border with mingled greed and hatred and fear. Then, in the year 2031, came the cataclysm.

"The Oriental scientists discovered atomic disintegration six months before the West, and plunged into war with atomic bombs and all the terrible engines developed in a hundred years. They almost won at the first plunge, sweeping down to the line of the Rhine and the Danube, laying waste Australia and all North America west of the Rockies. Then the West rallied and held its lines on land and in the air, while scientists on either side worked desperately to discover more deadly and better controlled

forms of the horror of disintegration now common to both parties.

"For twenty years, hopelessly, the struggle raged, the Americans now pushing the Chinese back into the sea, the Russians and Indians retaliating by seizing all but the tip of Africa; and the people suffered. They died by tens of millions in the armies, died in ever greater numbers from explosions and poison gas and disease germs in the factories at home.

"Toward the last, when both sides had settled down to a stalemate policy of mere raids and devastation, they even began to starve in the big cities, and class warfare broke out against the rich and the farmers. Those last five years, when the whole world seemed about to go under, the birth rate dropped almost to zero, and the world's population had fallen to a quarter of its pre-war level before the conflict and its after effects were over. Russia, France, and central Europe were almost wholly depopulated. In a last sortie with newly developed ray disintegrators, an American air fleet manned by women and fifteen-year old boys simply blew Japan off the face of the globe—there's only a shoal there now.

"It was then, when it seemed just possible that at huge cost the Oriental peoples might be annihilated, that the war-weariness and reborn conscience of the West refused to permit such sacrifice or such slaughter. The West offered peace, and the East though with a new weapon of its own in preparation, as gladly accepted it. At Honolulu in 2050, without conditions, without victory, was signed the peace that has endured until today—and shall, we hope, forever.

"The next fifty years were the dark ages of modern times; a struggle, at times seemingly hopeless, to reclaim the world from devastation and ruin, to restore agriculture and civilization before the remnant of mankind starved or returned to the brute. It was a hard, painful time, and yet it proved to be the foundation of our world today. In the time of their misery, the peoples of the earth called upon the God they had forgotten, and He was there to answer their prayer. Joined together by a common loss,

a common struggle, and a common hope, they forged ahead in a new unity toward the ideal world we think we are approaching.

"We have learned much from the history and the precepts of those days. We have learned that, if civilization is to endure and advance, the world must *consciously* strive to make itself just and beautiful and happy, as well as prosperous. We have learned that the key to science is not its acquisition but its use—the principles of all our devices were known in the last century, and turned to destruction. We have learned not to be too proud, thinking how near we once came to the edge. In the heart of each of us is still something of that spirit which brought the world up out of its danger, literally the Spirit of God moving over the face of the earth."

An Astounding Discovery

THE next day—Monday, he subconsciously persisted in calling it, although he knew it to be Friday in this year—Storrs was left to his own devices all the morning. Rodgers, of course, was at the Museum, and Anne remembered she had to fly down to Los Angeles to keep an engagement. Not trusting himself to find his way in the new San Francisco, Ted kept within the apartment, spending most of his time in the library.

He had counted on looking through the books on Rodger's shelves, but to his consternation he found himself incapable of reading them. Their language, when he puzzled it out, was the same as that spoken, or practically his own—since the English tongue, stabilized by printing, had been almost entirely unchanged by centuries. But the phonetic spelling and symbols that had been developed made the sounds as hard to get at as in, say, shorthand, and Storrs had not the pertinacity to go through more than a sentence here and there.

Other books on the shelves were Spanish, that most phonetic of modern tongues, in close to its present-day spelling; but Ted knew only enough of the language to recognize it. A third bookcase contained volumes whose sounds were pure gibberish, but

which he judged from the illustrations and ornaments must be Chinese in the standard phonetic spelling. It occurred to him as very likely that after the destruction Anne had described these three were the peoples who had survived in sufficient preponderance (the Spanish in South America) to make their tongues as nearly a universal language as the world could hope to achieve.

Turning from the useless books, Ted decided to risk injuring the machine by experimenting with the radio in one corner of the room. It had, he found, single dial tuning, and he let the various compensators alone. Jacked into the set was a sort of mask containing light-weight earphones with goggles over the eyes. Remembering a vague something of modern experiments in television, he put the thing on, and turned the dial slowly in the dark.

The first station he reached was audible only, a talk of some sort in sing-song Chinese. The next one he caught, not by music, which he might have missed altogether, but by a rainbow flash before his eyes as he turned the dial past. He went back more carefully, and music and scene became clearer, though the latter remained for a while badly blurred. He finally discovered that the goggles were adjustable for focus, and as he turned them the picture came out, startlingly clear in its colors, and even more startlingly solid.

The bright-costumed dancers that whirled about the ballroom were as real and close as if he had been standing among them. It seemed as if he could touch one couple as they spun, and he almost toppled over the receiver in his involuntary attempt to do so. The music, too, was dimensional—the two phones, apparently, being fed by different currents—so that he could judge to which side of him were the various instruments of the unseen orchestra.

The thing was a marvelous toy, and growing more expert in its manipulation, he turned for hours from scene to scene, from a glimpse of the black sea-bottom with a self-luminous monster swimming straight at him, to the Opera at Calcutta, where the traditional costumes and the familiar, melancholy strains of *La Bohème* brought him a

pang that had in it a sort of homesickness. At length, however, the weight of the eye-pieces became a strain, and it was rather disconcerting to keep turning his head and have the view remain the same. He turned the machine off. He was really glad when, just as he had finished a dinner ordered up on his host's account, Rodgers appeared to inform him that he was wanted by the Committee on Motion in Time.

HE met the Committee. There were five members: two white-haired men who looked like brothers; an ample German Frau; a young fellow of Ted's own age, with a wild shock of hair; a withered old Chinese woman, fingering constantly a bit of jade. They had already heard the outline of Ted's story, and seemed, in the main, convinced of his honesty. However, there were a few test questions for him—fine details from their ancient archives, as the early transoceanic flights and baseball standings, and a long list of prices. He answered correctly such a great proportion of these, and so frankly confessed his ignorance of the rest, that their remaining doubts were stilled. At once they poured out the flood of their own queries:

"Young man, now that you can speak in confidence, tell us what were your methods."

"Was the prime agency physical or psychological?"

"Do you think you could do it again?"—this from the artistic-looking youngster.

"What were your sensations as you passed through two centuries?"

Storrs answered them one by one, feeling just a little ashamed that his real accomplishment was so far below their anticipations. He had had no methods, and his leap into space, wholly involuntary, had probably taken place through external and physical means. His only reason for thinking the process might be reversed was that it had already taken place the one way. He had felt no sensations whatever, his shift in time being unnoticed and, if one could so use the word, instantaneous.

"Then you did not simply speed up the normal flow of time, as we have been hoping

to do." The Frau's pronouncement mirrored the general disappointment.

For perhaps fifteen minutes the five pondered the problem, while Ted shifted restlessly in his chair, and Rodgers was absorbed in his own speculations. There was not even the ticking of a clock to disturb the silence, for the radioactive machines worked noiselessly. At last the Chinese matriarch, who had hitherto remained silent, spoke:

"Would you mind telling us again just what year it was before you made the jump?"

"Nineteen hundred and thirty-three," Ted supplied her.

She almost shouted, "Two hundred and fifty-six years! Don't you see, the N^n of my helical theory. Two hundred and fifty-six, four to the fourth."*

CHAPTER IV

The Last Evening

ALL five began talking at once, arguing, articulating wildly, scribbling mazes of formulae on the table cover. Ted could only catch a word here and there. The rest, when English at all, was, in vocabulary and thought, simply over his head. At last they seemed agreed, and the old man who acted as chairman turned to Ted.

"Mr. Storrs, you have performed a great service to our investigations. Your experience has proved, in confirmation of Madame Ng's hypothesis, that our time stream is curved helically in some higher dimension. In your case, a still further distortion brought two points of the coil into contact, and a sort of short circuit threw you into the higher curve. The verification of the helical theory is beyond reasonable doubt."

He paused, and cleared his throat.

"Now, as to yourself. You may, if you wish, remain in our era. The Committee will be glad to take care of you, and for a while, at least, the History people would pay high for your services in settling some of their problems about your period. On

*She meant, "four raised to the fourth power," or $4 \times 4 \times 4 \times 4 = 256$.

the other hand, we would be more than glad to make the attempt, harmless if it fails and very likely to succeed, to send you back to your own times.

"We have an electrical space-distorting coil whose side thrust perpendicular to the time-stream we have tried hitherto to suppress, but which we shall now emphasize. If you stand at the same spot and the same time of day as your first jump, this will have a good chance of throwing you back to your own curve of the stream.

"In case you wish to avail yourself of this opportunity, the sooner you decide to do so the better—both because the two curves must be separated rapidly, and in view of the fact that adjustment of your mind to our time would make the jump progressively harder. We can have the machine fixed up by tomorrow noon, and perhaps you had better make up your mind by then. Either way you decide, you have our thanks for what you have already done."

The company rose together, and Storrs took the signal to leave. Outside the door was a group of newspaper reporters, who tried to persuade him to don his old clothes, which he had sacrificed for more congruous attire, for a photograph. This much of civilization had not changed in centuries. Ted got rid of them at last with a brief statement, referring them to the Committee for technical details. Then, in company with the still more irritated Rodgers, he set out for home again.

When they arrived, Anne had got back already, and had dinner coming up for them. She was silent during the meal, while they told her of the day's developments—Ted of the conclusions of the Committee and its projected experiment, Rodgers of the "find" of an early twenty-first century library opened up by a farming company's power plow in the Middle West. The sun still shone when they were through, and Anne, excusing them to her father, threw Ted a cloak and pulled on some wraps herself.

"If you don't mind, I've one of my favorite views to show you."

They drove to one of the tallest downtown buildings, parking in the huge space

that underlay all of it. An elevator shot them up to the small, flat roof, and they climbed the tower that stretched still farther above. At its top, with their feet braced against a battlemented edge, they could sit secure and gaze out over the city.

In the west, the sun was sinking beneath a growing pile of clouds. Up where they sat, its light still made day, but down in the streets the shadows were creeping in. Gray, growing ever darker, they climbed the sides of the building with clutching fingers. In the increasing gloom, the great pyramids bulked larger than ever, black and a little terrible. Now only a few of their high tops were afire. Now the sun had set, and the Cathedral spire alone shone a faint rose in the afterglow. The night rushed in.

WITH its coming, as at a common signal, the lights of the city flashed forth. In windows, along streets and causeways, projected from the single headlights of the little cars (there were no electric signs), they were not glaring, but of the soft silver Storrs had noted before, looking a little bluish in the distance. As the darkness became complete, they were all that could be seen: gleaming, insubstantial, lovely. The bridges—the little ones across the streets, the great spans thrown over the Bay and the Golden Gate—hung from their cables that were loops of light, like things out of another world. It was like a fairy city, a city built of gossamer and dreams. Overhead, the stars were coming out, and against them glowed, here and there, the firefly lights of airships as they passed.

Beside Ted, with her chin resting on her knees, Anne had remained silent. Now she spoke, reading his mind:

"You're going back, then?"

"Yes. It may be foolish of me, but somehow—"

"I know. You could get along very nicely here. Work is not too hard, and very interesting, while we have things that the millionaires of your day could not possess. Some of us—would like you to stay. And yet it would seem to you, as it must seem now, a sort of unreal dream. That is one absolute thing about time, in spite of their

theories. I could never be satisfied in the future or the past."

The fog was rolling in in a great wave, white and soft and cool and still. Now one, then another of the bridges over the water was shrouded in it and disappeared. The city itself was blotted out, only leaving the vapor faintly luminous. When, over the faint glitter of lights that was Oakland, the moon rose, its rays fell upon a white, billowing sea that had covered San Francisco. Here and there, as where the two of them were sitting, a black peak rose above the high-piled fog. The rest was a dazzling, solid barrier, that left them isolated, for the moment, from the world. Then a cold wind from the sea blew in, whirling ghostly mist-tendrils in the air. They rose and turned to go.

The morrow passed like a flash. One minute, so it seemed to Storrs, Anne was mockingly reading to him the morning paper, with his full-colored picture on the front, and beneath it the headlines, "UNWILLING VISITOR ARRIVES FROM 1933; May Try Return Trip." The next, he had placed himself, as well as he could guess, upon the spot where he had made his entry into this world, and the members of the Committee, with their assistants, were assembling around him a complicated arrangement of coils and plates.

It made him feel, he says, and he smiled a little then to think of it, like the filament of a vacuum tube. There was rather a crowd outside, with motion picture photographers and a radio televisor to catch the scene as he disappeared into nothingness. Anne was there, too, and her father, she in her uniform ready to pilot the "Polar Special" at one. As the preparations drew on endlessly, Storrs became nervous. He even thought of giving up the venture, only to be dissuaded, strangely, by the consideration that it would disappoint these people.

At last they were ready. All but two of the indicator lights on a many-dialed control board were glowing brightly. Storrs felt a little giddy, and judged that the preliminary circuits must be getting in their effect.

(Continued on Page 1039)

The Murders on the Moon-Ship



Terror Stalked Among The Passengers of the Space Ship – As The Unknown Struck

THE last case was aboard: the final handshakes were over. The last passenger, a fussy little fellow in a check suit, had at length given heed to the frantic hooting of the siren, disengaged himself from the powerful embraces of an oversized yet lachrymose female: and, clutching his ticket in one hand, and a tenanted parrot cage in the other, made a breathless and hatless dive for the gangway.

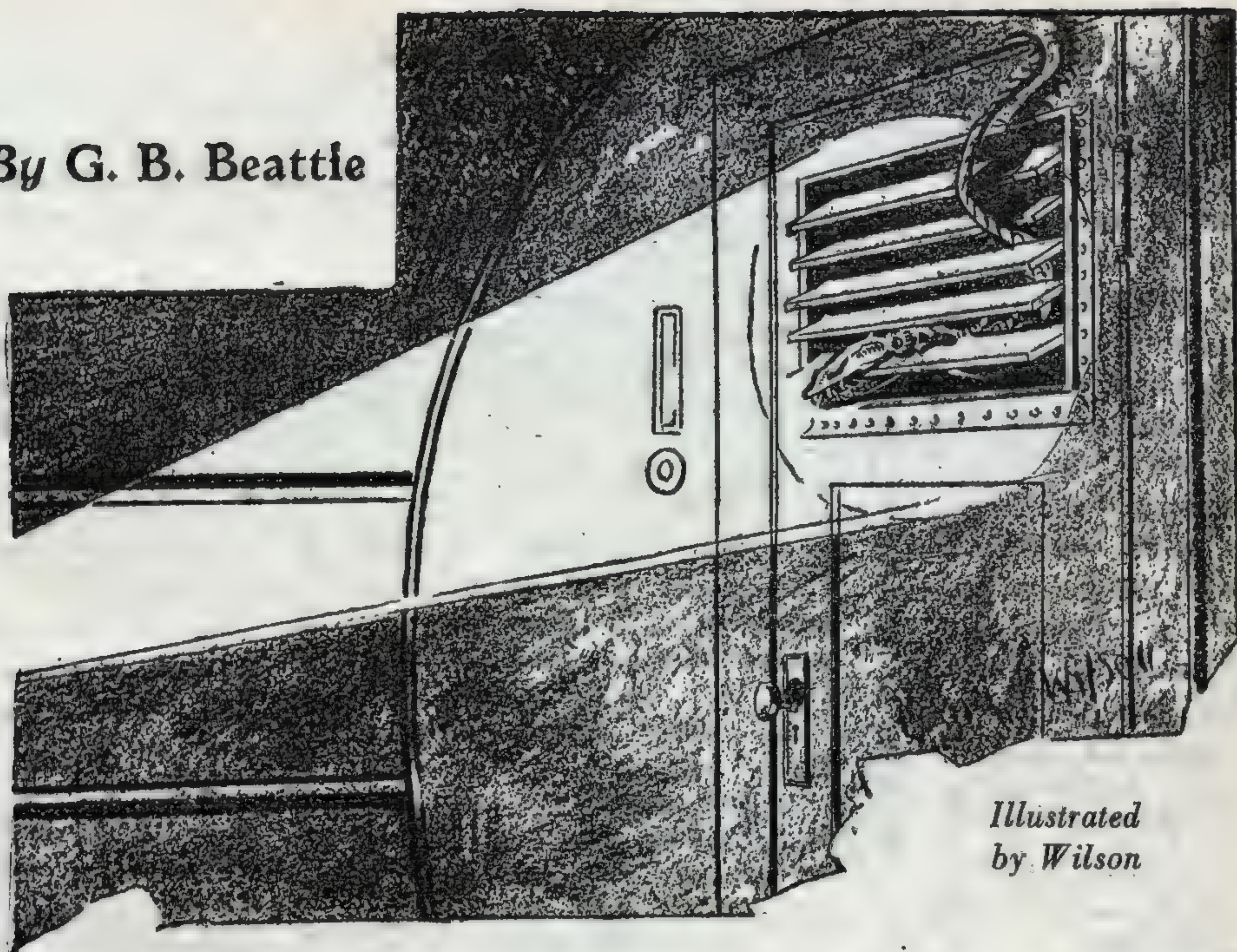
To old and seasoned space-fliers like Professor Galloway and myself, there was something ludicrous in all this emotional bustle, this fuss and pother over a little hop to the Moon; but, then, in all probability the majority of the voyagers had never before left the Earth, while there might even have been some, incredible though it may sound to my twenty-first century readers, who had

never before travelled beyond the boundaries of their own continent.

Nevertheless, as the captain radioed the starting signal for the first atomic explosions to propel our bullet-like liner through the twenty-mile starting tunnel in the Welsh hills, I fancy that even my bald-headed and fossilised old friend must have felt an odd thrill, although the only emotion he displayed was extreme irritability at the departure time being at least two minutes behind schedule.

Whatever old Galloway felt, I know that I, D.S.O., explorer, one-time secret service man, and erstwhile War Correspondent though I was, never left for a trip to the moon without a sinking feeling in the pit of my stomach as we commenced that tremendous acceleration through the tube. And

By G. B. Beattie



*Illustrated
by Wilson*

He pressed the button of his torch and saw the creature's head being forced through the aperture . . . he attempted to write . . .

despite all the refinements in the way of gravity stabilisers, velocity equalisers, these "stats", and those "stats", with which all modern moonships were equipped, on this particular occasion, that sinking feeling seemed more intense than ever before. It was as though my reactions were warning me of the terrible events which were to take place, before the X22 reached its destination.

The X22 was one of the Packet Company's latest vessels, with eight-cylinder atomic propulsion engines, and a host of mechanical gadgets which did not interest me in the slightest, for I am no engineer. What did interest me was the excellent cuisine, and the really comfy little cabins, to say nothing of the varied and extensive stock of sparkling wines laid in by the discriminating purser. And noting the general air of luxury, comfort, and home-from-home-ishness, as we made our way through the Earth's atmospheric belt, I forgot all about my premonitions, and began cheerfully to anticipate this two months' trip as a veritable oasis. It would be, after the hard-

ships old Galloway and myself had undergone on the wild mesas of South America during the past two years, collecting his confounded specimens, and contracting malaria. Once we reached the Professor's Lunar observatory, I knew the old grind would begin again, but for the next two months, I told myself, I was just going to vegetate in blissful tranquillity, and friend Galloway could go to the devil and take his beloved fossils with him.

The professor had other ideas however. We had scarcely reached the zone of outer space, when I encountered him in the billiard room, surrounded by a group of admiring passengers who were plying him with questions about the moon, his work, space, the fifth dimension, the missing link, and a hundred and one other scientific puzzles, for Galloway's brilliance and catholicity of accomplishment were by-words throughout the whole world.

A BORN showman, my old friend rose superbly to the occasion. His eyes sparkled, his long white mustachios, which

always reminded me of a comic opera brigand, seemed to take on a fiercer aspect. And even his polished bald head seemed to glisten with greater iridescence, as he spoke of his wonderful laboratory and observatory on the moon, of the artificial production of air and the synthesis of water on the satellite: of the strange two-dimensional natives of the moon, who could live intelligently without water, food or atmosphere, and finally of our two years' search among the rocks of the little known South American plateau for fossil specimens of "missing links" in the evolutionary chain. Finally, with a soft graciousness which was in total contrast to the vicious irascibility which he was wont to display in controversy, he hoisted a chubby little fellow of about seven years old, who had asked him if "He found any bird's eggs in South 'Merica?", and promised to show him on the morrow not only birds' eggs, but alligators' eggs, and strange animals in stone that had roamed the earth ages ago.

The next few days passed peacefully enough, with Professor Galloway very much in the limelight. Through the windows of the lounge he would point out the beauties of the heavenly bodies set like jewels in the dead blackness of outer space: he would discuss orbitary navigation with the

spatial officers, or repeat his little scientific talks to the passengers who were delighted and surprised to find such an eminent personage, as accessible and agreeably informative. But, wherever my old friend went,

he was accompanied by little Jackie Hiliard, whose parents had much ado tearing the young rascal away at sleeping time to get him to bed.

In all my long experience, I had never seen Galloway unbend to such a degree, nor had I ever known him show so much affection for anyone as he appeared to do for this small boy, who, I should imagine must have tried Galloway's colossal mind with his infantile queries; but then space flying, like sea voyaging, seems to make people more friendly. The child's parents were a good-looking young couple: none too well off, if I might judge by appearances, and no doubt making their way to the moon with a view to settling down there and improving their prospects.

Our other passengers were more interesting to the student of humanity. Most interesting was Docteur Emile Fouchard, of psychic and metaphysical fame, a tall gaunt man with a trim

beard, a air of mystery, and the clothes of an undertaker. He had little to say, but when he did speak he gesticulated like a circus contortionist, and almost invariably

I *MAGINE a handful of people, travelling on a space ship between the earth and moon. In their midst is a merciless destroyer. He strikes not once but five times—each time in a different manner. The crew and passengers are terrified—they suspect each other — madness begins . . . such is the material that this story is made of.*

It is enough to say that fear is the greatest aid of the murderer; just as it is ultimately his own undoing. If he wishes to kill any person he need only make them aware of the fact and arouse in the victim's mind such a feeling of terror that he will betray himself to his assassin. For when terror grips us, we cannot reason, we cannot take the ordinary precautions that should be used to defend ourselves.

Then, too, it is fear of apprehension that leads the criminal to ultimately leave some track that will betray him. For in the game of chess that he plays with the forces of order, it needs only one false move to lead to disaster.

We are sure our readers will enjoy this engrossing story of humor, tragedy and mad terror in the interplanetary spaces.

in a low musically intoned yet uncanny voice he would quote some adage anent the insecurity of human life, or throw out some dark hint of coming peril. After the first day or two, the other passengers made a practice of "seeing him first," and giving him the air, and for hours he would sit musing in a chair, fingering an exotic ring, which he had informed me came from the tombs of the Pharaohs, or poring over his favorite volume, a leather-covered copy of Shakespeare's "Hamlet".

The fellow got on my nerves, there was something sinister about him; that's the word, *sinister*, although the American purser, Minott, used another characteristic Yankee term; something to do with insects; ah, yes, "bughouse", that was it. At least that was how I remember it.

A Goodly Crew

IT was almost a relief to turn to Mrs. Van Stokes, who, if she *was* fat and vulgar, and overpoweringly reminiscent of pork, was at any rate cheerful and happy. She claimed to be the widow of a rich pickle packer, although I suspected her widowhood was of the grass rather than the common or garden variety. She furnished a sort of comic relief to our scene.

Then there were the Rutledge twins, Beatrice and Cornelia, sprightly young ladies of twenty summers apiece: honorable, leaders of the Bright Young People who attempted to paint London red, and only succeeded in imparting a rose pink tinge to some of the more insignificant suburbs. Born practical jokers, they found Dr. Fouchard, and poor old Galloway ready-made butts for their rather broad humor, which consisted in such silly tricks as binding Fouchard's feet together while he browsed over "Hamlet", or neatly tying the printed legend "Lost" to the back of the professor's smoking jacket while one of his impromptu lectures was in progress. Next to Fouch-

ard, I liked the Rutledge twins least of all among my fellow passengers.

Then there was Adolph Bratz, the piano virtuoso, long haired and unkempt, but with a lurid reputation alike as a hammer breaker, and home breaker. He was very friendly with Mr. and Mrs. Hilliard, and I later found that he was financing their trip, though why, I couldn't imagine, for neither of the Hilliards knew a Beethoven Sonata from the five-finger exercise.

And last but not least in self-importance was the fussy little fellow in the check suit, who rejoiced in the name of Henry V. Johnson. He was a physics teacher in a small-town high school, and was out with the purpose to teach the world; his trip

to the moon being the result of his winning a prize offered by a Sunday Paper: place the most popular planets in order, first prize a trip to the moon, all found! You know the kind of thing! Anyway, Johnson had won, and here he was, with his parrot "Priscilla" in the bargain. (He confided to Galloway, "As one scientist to another", that he was taking the parrot, to test the lunar atmosphere, before

he stepped out of the ship to risk a breath himself. To his mind it was a new way of "trying it on the dog" which somehow got to the ears of the Rutledge twins after which Johnson's life became a misery).

So you will see that we were rather a mixed lot. McFee, the Scottish engineer, put it very pawkily, when he whispered to me on the second day out, "Present company awllways excepted; Majorr, they're a gey queer carrgo this trrip."

The personnel of a space-flier is not of course very extensive. Captain Brant I knew well: we had played in the same football team, and I had perfect confidence in his courage and ability in all emergencies. Like myself, he was getting a little worse for wear these days, but there was plenty



GEO. B. BEATTIE

of life in the old dog yet, and he could have given many a younger man a good run for his money at half a dozen forms of athletics. With Minott, the purser, McFee, the engineer, Olsen, the radio-man, and Shepard, the navigator, we had as hard-boiled a group of officers as ever stepped aboard a space-flier.

Of menial members of the crew of course, there was no sign, for the purely menial tasks were carried out by robots of striking design and characteristics. I had almost forgotten a most important member of the personnel, Mrs. McNamara, the stewardess, a cockney with an accent you would cut with a knife, and a temper that made old confirmed bachelors like Galloway and myself thank our lucky stars.

CHAPTER II.

The First Disaster

HERE we were then, seventeen souls speeding away from the earth, as fast as atomic disintegration could carry us, each with his or her own secret ambitions and aspirations: each with his or her own secret fears. From the first, our isolation welded us together into a large family and before we had been a week out, we felt we had known each other all our lives.

Then, like a sudden thunderbolt, came the first blow which heralded the reign of terror through which we were to pass, the first blow which was to undermine our confidence in one another, and to make us go about suspecting each other and fearing for our very lives.

The first blow was comic, ludicrous, "damned silly nonsense," as Galloway put it. Johnson's blessed parrot was found dead in its cage! Just that, nothing more! There was no sign of molestation. The cage was undamaged. It stood on the centre table, in Johnson's cabin just as he had left it when he retired for the night. In the morning, the parrot was lying dead in its cage. Everyone sympathised with the little physics teacher to his face, and smiled at his forlorn countenance, behind his back. But Johnson was not so easily pacified. He

openly accused Professor Galloway of poisoning the bird, and raved and ranted for an hour or more to Captain Brant, who had great difficulty in controlling his own sense of risibility. Nothing would please Johnson but a thorough examination, not only of the carcass, but also of the bird seed and water.

The matter was somewhat complicated as Galloway was the only one aboard who had the necessary technical qualifications for such a task, and the professor was unfortunately, "prisoner at the bar" so to speak. Questioned as to why a eminent professor like my friend should stoop to such a petty and unnecessary act, Johnson reiterated again that it was professional jealousy. He had got the better of an argument with the professor the night before, Galloway had got very angry: ergo, Galloway had poisoned the parrot out of spite.

Everyone took the matter as a joke except Johnson, and of course Galloway, who lost all of his amiability, and gave vent to a string of expletives that almost upset the ship. We left the two reviling one another, and I turned in with Captain Brant, for a smoke and a yarn.

"Come to think of it, you know, Major, the professor *was* a little bit rude to the dominie last night."

"Oh!" I ejaculated for I had spent the evening discussing Brahms with Herr Bratz.

"Yeah, the old man had been displaying some of his fossils and lecturing a select group about the discrepancies in Lamarck's theories, when Johnson butted in with a query about suspended animation. This upset Galloway, who inquired whether he wanted any more irrelevant information for his kindergarten cranium, such as the number of legs a caterpillar possessed, or whether elephants lay eggs. But little Johnson stuck to his guns and told a cock and bull story about a toad that was found by some miners blasting, embedded in rock formations at least a thousand years old. The miners thought it was a fossil, but some director of natural history thought otherwise, applied oxygen and restoratives, and the toad came to life, and for a matter of three weeks or so, frisked about, at the end

of which time he was attacked by another toad in the laboratory and died.

"Old man Galloway fairly snorted at that: he was sore at his little lecture being interrupted with such twaddle, but Johnson, with a smile of triumph, produced old faded cuttings authenticating his story. This fairly riled the professor, who described the whole affair as a silly hoax, one thing led to another until Galloway so far forgot himself as to call Johnson a liar, to which Johnson's parrot made the classic retort, and Galloway's sense of repartee was worn so thin that he could only reply that if such states of suspended animation really existed, the sooner Johnson entered one the better, and he had better take his confounded parrot with him. And that concluded the programme for the evening. Both went to their own cabins looking daggers at one another."

"U M. I see. Still surely no one believes Galloway would do such a stupid act."

"No, only Johnson can conceive such action, and he is suffering under a sense of grievance. When he comes to his senses, he'll realise like the rest of us that the damned thing died a natural death. It's just coincidence that he quarrelled with the professor the night before."

As I made my way to my own cabin, I could hear Galloway and Johnson still at it: the one arguing angrily against the other, much to the secret amusement of the Rutledge twins. Come to think of it if there *was* foul play about this beastly parrot business, it looked much more like these mischief-making young females' work than poor old Galloway's. But then, although they were fond of fun I could not picture these young ladies descending to such useless cruelty. The day wore on, and for the first time Galloway did not lecture in the billiard room. Truth to tell, this confounded parrot business had got on everybody's nerves, and one and all were glad when sleeping time arrived, and we could make excuses to steal off to our own cabins.

Personally, I felt awfully disturbed. Even a stiff peg of O.P. whiskey could not woo

for me sleep, and I lay tossing from side to side. After all, there was something damned funny about a healthy parrot popping off suddenly like that, and Galloway had behaved very strangely for him since coming aboard! At length I fell into a troubled sleep in which parrots with beaks like pterodactyls chased me all over the moon. A loud gurgling woke me. I sat up, fully awake, my heart pounding with the sudden start. Footsteps? Yes, then a cry for help: it was Galloway. Was Johnson attacking him? I grasped my automatic and made my way to the place from which I guessed the cry to have come. It was Johnson's cabin. Switching on the light, what a sight met my eyes! Galloway stood supporting Johnson. Both were in their night attire. From Johnson's neck the blood spattered and spurted like a fountain despite Galloway's efforts to swab it. In Johnson's face was a drawn look of terror, such as I had never before beheld, and on the floor I was horrified to note the professor's ivory paper knife in a pool of blood.

The noise had attracted the others, and passengers and officers alike were crowding into the doorway. Brant waved the women back, and closed the door. Johnson was already beyond help, a jagged wound through the carotid of the size he had experienced was more than any man could survive. The Captain took in the situation at a glance. McFee stood over the professor with my automatic, but Galloway seemed too dazed to comprehend the situation. When at last he realised he was under arrest for murder, he protested his innocence bitterly and vehemently, and called Brant and the rest of us all the fools and dolts, urging us that while we fooled about with him, the murderer was making his escape.

Pro and Con

BUT the damning evidence of the paper knife, and the wound in Johnson's neck, which was just such a gash as the ivory knife would make, at length made him realise that further protest was useless, and

with a sigh he resigned himself to the inevitable. What an object lesson, I thought to myself, for those with uncontrollable tempers. A few hasty words over some scientific triviality had led one of the most brilliant men of science to commit a cowardly murder. I couldn't bring myself to believe in his innocence despite his protests. I knew his bursts of passion too well; but I listened to his faltering account of the incident, with a quaking heart, for we were friends of old standing.

According to Galloway, he had been awakened by a peculiar swishing noise which he could not describe. He arose to investigate, and switching on the light, grasped the paper knife as the only available weapon, although what he feared aboard the moonship, he had to admit, he could not say. Then he heard Johnson cry out, a deep gurgling sound followed: he raced into Johnson's room, and by the glimmer of light from his own cabin opposite saw that Johnson was lying back in his bed bleeding grievously from the neck. Dropping the paper knife, he attempted to arrest the flow of blood with the bed covers and was so doing, when I made my entrance.

We all listened politely, but none of us were very impressed. The defence was just a shade too complete. It covered all the obvious points, as for instance, why Galloway had not switched on the light, and the presence of the paper knife, and we were all really relieved when Captain Brant had him conducted to a spare cabin under guard, so that we might talk more freely.

Of course, the only thing to do under the circumstances was to radio the spatial station from which a speedy magnetic rocket with a police official would be dispatched to take charge of the case, but we were one and all bowed down with the horror of the tragedy. That is all except Dr. Emile Fouchard. The inhuman wretch seemed in his glory, and punctuated our gloom with his horrible fatalistic quotations of which his crop seemed at all times to be full.

Suddenly, he veered round excitedly "Captain, you av ze wrong man. I am sure. In ze first place, look at ze daggair. It lies in a pool of blood. Zat is true, but note

carefully, ze point does not lie in ze blood, and for two inches from ze point, is it not white and glistening, innocent of blood? Has the assassin then used ze haft of ze daggair, to make ze puncture? No! for ze haft is blunt. It looks then, that ze professair is of an innocence as he declare.

"Considair too, he made a cry for help. Would he have made that cry if he had been guilty before the murdair 'ad been smoothed ovair, and he made his escape. He was assist ze victim, when he knew that if guilty, recovery would spell disaster for himself."

The latter part of *le docteur's* speech did not impress me much, for Galloway would have acted just so, I knew, had he, in a moment of passion struck Johnson. He would have done everything in his power to undo the wrong, but the evidence of the paper knife was conclusive. For a couple of inches from the point, there was not the slightest trace of blood and it's general appearance bore out Galloway's statement that he had dropped the paper knife to render first aid to Johnson.

Brant's face was a study. "Well, if the professor did not kill Johnson, who the Hades did, can you tell me that, Docteur?" Fouchard smiled that horrible sinister smile of his. "Ah, who can zay? There are now sixteen of us aboard, it may be any one of us. Who knows? But one of us it *must* be, unless a spirit"

"Tush," put in Brant roughly. "Pretty hefty spirit made this mess. Besides, none of us here believes in spirits."

"No, zat is a pity. 'There are more things in 'eaven and earth that are dream't of in *your* philosophy'. Who knows, who knows?" and the docteur glided out of the room.

"That bird puts years on me," said Minott, the purser. "Betcha life he knows more about the job than he says."

"**T**HAT'S quite enough; Minott," rebuked the Captain, "Tell Olsen to radio the spatial station, and inform them of the occurrence. It's out of my depth, and I need help. In the meantime, Major, let us have a talk with the professor, and

see if we can do anything to solve the mystery."

We moved to Galloway's prison. My old friend looked twenty years older than he had the previous night. The terrible accusation was bearing heavily upon him. He welcomed us with a wan smile of hopelessness, but when we informed him of our finding of the knife's innocence in the affair, his face brightened perceptibly, and he wrung our hands with delight.

There was still much to clear up however. As Brant said, if Galloway *was* innocent, who was guilty? And, even more mysterious, if the paper knife had not made the fatal wound in Johnson's neck, what had? We had searched the apartment, but no trace of a weapon could be found. Galloway was as nonplussed as the Captain and myself. While we were investigating, I noted some scraps of burnt paper by the side of the lamp. Well, there might be a clue here. The three of us took up the scraps. Whoever had done the burning had made a bad job of it, for there were several scraps containing words in a feminine hand. It was a tedious business smoothing out the fragments, but what a reward, what a clue! When we had finished, it read, with many a gap between:—

"Dea n

You must me see you.
My husband knows all. s n r game
if rent h w intrigued
cad Rotter m you remember
I just love sneer t make a false
move I kill sight sin
trice"

Brant gave a low whistle. "A most incriminating document". "Yes," said Galloway, "We never thought of the women, but it's a case of *Cherchez la femme*, once more."

"Um, question is, which woman? 'trice' is obviously Beatrice, but there are three Beatrices aboard. One of the Rutledge twins, but we can count her out as she's a spinster: the Van Stokes female, who may or may not be a widow: and Mrs. Hilliard."

"Well, I bet it's the fat woman," put in the Captain. "I hate the sight of that amorous overfed creature. Just the kind to be

carrying on an intrigue with every man she meets. In fact, she's been chasing me around since the moment she came aboard."

"Um, yes, but I never heard of a fat man committing murder, Captain!"

"No, Major, but this is a fat woman, and Belle Guinness wasn't exactly two-dimensional, y'know!"

Even under the horrible circumstances, we had to laugh at the Captain's prejudice. Still, that wasn't getting us any further. I was inclined to agree with Galloway that the most likely Beatrice was Mrs. Hilliard, modest and demure though she had always appeared. For one thing, she was the only woman who could be definitely proved to have a husband, for another, that husband was aboard, and the note seemed to me to reveal the fact that the husband had discovered the intrigue since coming aboard, even if it had been of long standing.

CHAPTER III.

Another Tragedy

MY own theory was that Hilliard had dispatched Johnson, in a jealous frenzy. But there was such an inglorious uncertainty about the whole affair, that Brant could hardly arrest anyone. Finally, it was decided to keep Hilliard under surveillance, while I kept an eye on the Beatrices. I made my way to the lounge, where the women were huddled together. As yet, they merely knew that Johnson had met with some accident or other, and when I entered, I was plied with questions from all of them. Well, I'm not much of a bad news breaker, and I blurted out the truth before I knew what I was doing.

Mrs. Van Stokes had hysterics, Mrs. Hilliard was visibly affected; the stewardess crossed herself, and only the Rutledge twins seemed cool: damned callous in fact: didn't turn an individual or collective hair, so to speak. Still, they busied themselves looking after the other females, fetching water and smelling salts, and all that kind of thing.

I suddenly remembered I had a bottle of brandy in my cabin, and was hastening

along the corridor when I met Minott, the purser, with a face on which sheer funk was written all over.

"Major Burnett—come—Olsen—horrible—dead, bumped off in the radio room."

We hastened to the room. Olsen was in a standing position, his right hand on the electric light switch, as though he had just entered the room. His posture was almost lifelike, but when I looked at his face, my God, what a look of loathing and terror was there! I have seen scores of dead men on the battlefields, but I never saw such a haunting look of dread as I beheld on Olsen's dead face. Minott and I closed the door, retraced our steps to my cabin and each took a tot of brandy. Then we searched out Captain Brant.

When the Captain heard of the second murder, he was almost beside himself. There was something devilish uncanny about the whole affair. A murder or two on land, in an hotel say, well, it was bad enough: but one could get away from the location, but here driving through a vacuum in a shell-like contrivance: here we had some fiend in our midst and we could not get away from the peril. There were only fifteen of us now, and it must be one of the fifteen, yet who? who? who?

Brant, having himself radioed the spatial station, rounded up the passengers and officers alike. It was then that we missed Herr Bratz, the pianist. Come to think of it, we hadn't seen him when the first murder was discovered, and he had never turned up since. Putting two and two together, he seemed a bit sweet on young Mrs. Hilliard, was often in her company. Looked as though Hilliard wasn't the murderer after all, but that Bratz and Johnson were rivals, and Bratz had dispatched the physics teacher, and then hidden himself. Olsen's death squared with that. Bratz had overheard the Captain suggesting the calling of the spatial station, and fearing immediate detection, he had disposed of the wireless man.

The problem was, where was he hiding? An organised search was commenced. Bratz' cabin lay at the further end of the corridor. It was empty, nor was there any indication

that anything was amiss. A large quill pen lay in a bottle of ink, and on the same desk, a pile of music manuscript paper was arrayed. The chair in front of the desk had been pushed aside slightly, as though the musician had been interrupted in his composition by some noise outside, and had arisen to investigate the cause.

Outside the cabin, the corridor hereabouts terminated in a *cul de sac*, which was rather dark, even when the lights were on in the passage. We were just about to leave the cabin, when Mrs. Hilliard, who had followed us, uttered a little cry, and darted into the dark corner, where she fell to her knees sobbing "Jack, oh! Jack".

A DARK object lay by her. It was Bratz, dead as a doornail. Here then was the end of the mystery. Bratz was the murderer and he had committed suicide. Even as we assisted the grief-stricken woman, I couldn't help thinking that it was funny a noted pianist should have "Jack" for Christian name; a silly woman's pet name, I supposed.

It was while we were grouped around Bratz, that McFee announced sighting the spatial station's rocket, and in a very few moments we were conversing with Marshal Merrivale, the investigation officer from the station. Now, if this account was a fiction thriller, instead of an authentic narrative of cold fact, Merrivale would be introduced as an exceedingly brilliant amateur detective, with a knowledge of all branches of science, half a dozen unheard of detection machines, a private fortune and a liking for opium. On these lines, Merrivale was rather a disappointment.

He was a small man, with rather nice gray eyes, a moderately high broad forehead, protruding ears, tight-set lips, and a good deal of chin. He was about thirty-six or so to judge from appearances, and obviously physically fit although by no means of the ultra-athletic type. He didn't take drugs, he didn't smoke incessantly, nor drink absinthe: he didn't even chew gum.

Of course, we had all solved the mystery by this time. The culprit was dead by his own hand. We handed over the evidence

in the form of the ivory knife. The incriminating document, and what few other odds and ends there were to Merrivale, and then we all informed him of our own pet views on the matter, to all of which he listened with grave politeness. The truth is, we were all immensely relieved now that the murdered was dead. Three deaths in one night were horrible enough, but infinitely more horrible had been the suspense, with suspicion hanging over everyone. And with the relief, our tongues were loosened. Merrivale must have been fed up with all the twaddle we talked, but he heard us out.

Only Dr. Fouchard dissented from the popular view that Bratz had committed suicide. Hilliard was attempting to pacify his wife, who was almost beside herself with grief. Funny kind of cuss, Hilliard must be, I admitted, but I could not agree with Fouchard that the husband had dispatched both Johnson and Bratz. At length, Merrivale must have tired of our chatter, for he turned to the Captain abruptly and intimated that he would like to inspect the rooms where the murders had taken place.

I accompanied Merrivale, and for some hours we worked together although I must confess my contributions consisted in fetching and carrying of the most elementary kind. Examination of Olsen's body showed that he had been poisoned, but the poison was one which Merrivale could not identify. The administration had been through a puncture in the back of the neck, as though a minute hypodermic had been used. In Bratz's case, a similar puncture was found on the wrist of the right hand, and several punctures on the back of the left hand. The same poison was evident. In Johnson's case, no trace of poison was found, the big jagged wound being evidently the only cause of death, nor were there any traces of the tell-tale punctures of the skin.

I could see that Merrivale, unlike the all-triumphant investigator of tradition, was all at sea, so to speak. Two things puzzled him greatly, the fact that if the murders had a common source, the murderer had varied his technique: if he possessed such a subtle means of poisoning, why had he resorted to the comparatively clumsy method of stab-

bing in the case of Johnson, and then again, where was the weapon which had dispatched the little schoolmaster? Merrivale, unlike the usual 'tec, was only too glad to talk about his deductions; probably on the principle that two heads are better than one, even if the second be only of the mutton variety; and we discussed the situation together for a long time.

Too Many Theories

“YOU know, Major, I am sure of one thing, and that is, that the pianist did not commit suicide. For one thing, you see in the case of Olsen, the radio man, the poison evidently acted so rapidly that he had no time to stagger toward a chair. He just died where he stood, with his hand on the light switch. That he saw his assailant is evident from the look of horror on his face. He was evidently attacked the moment he switched on the light, and died the next instant. Bratz died from the same poison, administered in the same way. But where Olsen has but one puncture Bratz has several on his hands. Now, if the solitary puncture on the right hand was self-inflicted (an ambidextrous pianist such as Bratz could of course easily operate a hypodermic with his left hand) even if the poison did not kill him instantly, it would most certainly act with such rapidity that the right hand would be instantly rendered powerless; certainly it would be paralysed to such a degree that it would be impossible to transfer the hypodermic syringe from the left hand to it, much less inflict the other wounds on the left hand. And even more elementary, how is it we have not recovered the syringe, or other injection instrument? The assumed suicide could not have had the strength to have thrown it far or to have risen and concealed it, yet we have found no sign of it in the darkened *cul de sac*.”

I had to confess that our theory of suicide did not sound so probable after all. Merrivale continued:—

“There is another very elementary point which everybody seems to have missed. Although Bratz was the last victim to be discovered, examination of the bodies clearly

demonstrates that he was the *first* to die. There is little doubt that he was killed about 11 P. M. last night, while Johnson was not killed until about 2 o'clock in the morning. It is therefore evident that not only did he not take his own life, but that he could not possibly have killed Johnson, nor silenced Olsen."

"Ah, then Johnson killed him, and then took his own life," I suggested.

"And, I suppose rose from the dead, and bumped off Olsen at 3.30 a.m.," commented Merrivale satirically. "Hardly admissible! Of course, as Olsen died last of the three, he's technically the most likely to have killed the others, and then slipped his own cable, but there are several factors against that theory. First, there's that look of horror: then, Olsen was a big burly muscle-bound individual, who would have found it a physical impossibility to put that puncture in the back of his own neck: then again, there's no sign of the weapon. No, I believe all three were murdered and therefore the murderer is still at large."

"Um! not a very pleasing prospect, Marshal. Still, one thing puzzles me. Olsen was leaning against the jamb of the door: his assailant was evidently directly in front of him, from the look of horror in his eyes, yet he had just as evidently been attacked from behind, although there is very little space between his head and the wall."

MERRIVALE was about to reply when Dr. Fouchard strolled in. With his usual insolent suaveness, he commenced right away to air his views much to Merrivale's apparent amusement and I must confess, my own annoyance.

"'Ave you obsairved, *Monsieur de Police*, zat juist by ze place where Olsen died, ze wood of ze jamb is damage'; as though a blunt instrument 'ad been forced against it?"

He was obviously excited and gesticulated wildly, throwing his arms about. As he did so, I subconsciously noted that there was a difference about his hands, but could not think what it was. We examined the jamb, and sure enough, to the left of the spot where Olsen's head had been, the wood

was splintered as though someone had made a vicious jab with a ragged edged jack-knife. Fouchard smiled in triumph. He turned to me and wiggled his middle finger.

"And you, *Monsieur le Majeur*, 'ave you noticed the ragged tears in Herr Bratz's smoking jacket?"

I quickly seized his gesticulating hand and held it firm, "No, we have not, but we have observed the startling fact that you no longer wear that massive Egyptian ring!"

Fouchard tried to withdraw his hand, but I held him firm. His face blanched. "Surely," he stammered, "You do not tink I 'ave commit ze murders. For what motive, I ask?"

"Look here," spat out Merrivale, "What the blazes has the disappearance of your ring got to do with the murders? Major Burnett never mentioned murder. Still it seems to have turned you a bit queer."

"Yes, no, he knows ze ring was not ordinaire: it 'ave ze subtle Egyptian poison, so zat ze great Pharaoh may himself release from ze bondage of life. I carry it, and tink, I may sometime grow tired of life, too. Yesterday, I lose the ring. I search, I cannot find him. And you suspect me, it is terrible! terrible!"

"Um, gets nuttier. Anyway, whether your story is right or wrong, *Docteur*, you're under arrest right now. If we can find the ring, we'll analyse its contents, if any, and compare the poisons. If they are identical, then you can only be innocent by a devilish long coincidence."

Despite Fouchard's gesticulations and protests, Merrivale had him locked up in his cabin, pending further inquiries. Personally I was quite convinced of his guilt. Merrivale had an open mind. If the *Docteur* had mislaid the ring, it was possible a third party had found it and committed the murders with its aid. On the other hand—well—I was developing a headache over the whole affair!

We commenced a thorough search of the passage in which Bratz lay. We verified the fact that there were several ragged tears in Bratz's attire. We also found several scratches and jagged holes in the flooring

about the body, but I for one did not overlook the possibility of Fouchard having made these marks and also the mark by Olsen's head, to throw a red herring in our path of investigation. As we were about to conclude our investigation, I noted something glistening in a corner of the ornamental skirting. I picked up the object: it was Fouchard's ring. The Marshal and myself made our way to my cabin to talk things over. Here we encountered Galloway, who had been sleeping for the last hour or so, and Captain Brant. We acquainted them with the latest developments.

"Well," was the Captain's verdict. "It looks to me as though you have the right man. Fouchard did the murders, and attempted to fasten them on Bratz, by leaving his ring in the pianist's hand, so that it would look like suicide. But the ring slipped from the pianist's lifeless fingers, and being round, rolled along for a considerable distance before lodging in the skirting. That upset the docteur's plans, and he evidently searched the spot for the ring without success, while you were examining the radio room. He then conceived the plan of making the ragged tears in his jacket, and when he got you safely out of the radio room he duplicated the performance there on the door jamb to throw you off the scent."

"Very likely, but perhaps not, Captain. If that were so, why should Fouchard be the only one to contest the general idea of suicide on the part of the pianist in the first place? Surely it was in his interest to foster the idea. Anyway, if Professor Galloway will assist me, we'll make a thorough examination of the ring and its contents."

CHAPTER IV.

Muddied Trails

WE were advancing down the corridor to Galloway's cabin, when we heard the most terrible row going on below. We hastened down the companion way fearing the worst, to find Mrs. McNamara engaged in a fierce altercation with Minott.

When we finally could arrest the flow of

Billingsgate from the fair stewardess's lips, we learned that tabloid foods and vitamin concentrates had been disappearing mysteriously. Minott had called Mrs. McNamara to account for the discrepancy in her stock of these goods, and this was the result.

We all laughed heartily: this bit of comic relief was welcome enough after the tension of the last twenty-four hours. The incident sufficed however, to delay the examination of the ring, and Merrivale must have momentarily forgotten about it for on ascending, he announced his intention of interviewing the Hilliards, with a view to ascertaining the connection between the incriminating letter and the affair. There was also the undoubted affection of the lady for Bratz to consider.

When we entered we saw that Mrs. Hilliard had composed herself somewhat. The boy was sleeping peacefully in his cot; while Hilliard was resting on the arm of his wife's chair. As we entered the woman rose and came towards us saying "I hope you will excuse me, gentlemen, but, you know my brother's death has come as a fearful shock."

"Johnson your brother?" I cried, astounded.

She shook her head. "No, the man you knew as Herr Bratz was my brother. He was no more German than you, Major, but at an early age he realised that talent alone would not get him far with an English audience, who always dote on foreigners. He studied for a time in Germany, became 'Herr Bratz', and was lauded to the skies by the public. As plain Jack Wilson from Rochdale, he would never have had a look in, in the West End. So thoroughly did he practise the deception, that he learned German like a native, and seldom spoke anything else. We all kept his secret: he was good, kind, and generous, though he *was* a bit wild," and Mrs. Hilliard fell to sobbing again.

"Well, that clears up one mystery," said Merrivale. "Now, we do not want to hurt you in your sorrow, Mrs. Hilliard, but there is certain information of vital importance which you alone can give us. Do you re-

member writing a note to Johnson shortly before he died?"

"Why yes," she said frankly enough. "I sent him an invitation to come along and see us. Jackie ran along with it and popped it through the door. You see Frank (her husband) and I once met him on a conducted tour in Holland, and we did not recognise him at first, he had changed so; so as soon as it came to us who the little man in the check suit was, I sent him an invitation to come along for a game of cards with us."

"That was all?"

"Why yes."

"Now, I do not want to pain or offend you, Mrs. Hilliard, but, er—that was nothing in that note, which a married woman—, er—no impropriety?"

Mrs. Hilliard flushed slightly, but looked very puzzled. "I do not understand," she said slowly.

"Well, nothing that you would not like your husband to know?"

Frank Hilliard jumped up angrily, but Merrivale waved him aside.

"No of course not," protested Mrs. Hilliard indignantly.

"**T**HANK you. Now, do you mind writing your usual signature on this piece of paper?"

The lady complied. Taking the pasted note from his pocket, Merrivale compared the writing on it with the signature. There was not the slightest doubt that the two were written by the same hand.

"Then, you admit you wrote this note?"

"Yes, but——" Her face went white. "There's something missing: I——"

Her husband picked up the note. "What is the meaning of this," he demanded madly. "Is this your *innocent* note? I've no idea what it means, but evidently you have been carrying on with Johnson, and thought I had discovered, you——"

"But, Frank, I can explain. It's really *quite* innocent. I swear. The missing words and letters: oh, how can I prove it?"

"The note is in pencil, I observe," put in Merrivale calmly. "Perhaps you used a writing pad."

"Yes, I did. I'll get it."

Merrivale took the pad, and taking off the top leaf, he held it up to the light. The indentations of the pencil were clearly seen, but the fact that other notes had been written on the same pad before made exact decipheration difficult. At length however, he turned with a smile.

"Mrs. Hilliard, we all owe you a most humble apology for our most unfounded suspicions. I'm only too glad to say that what I have discovered proves your story, and innocence to the full. The original note you wrote was as follows, was it not?"

"Dear Mr. Johnson," (not Dearest Henry, as we had thought)

"*You must really come along and let us see you. My husband knows all sorts of new card games, quite different from those which so intrigued you at the Arcade at Rotterdam as you will remember.*

I just love to see you two sneering at one another when you make a false move: It's a killing sight.

Do come, and renew an old acquaintanceship. Yours sincerely,

Beatrice Hilliard."

"And, Marshal, may I trouble you for a reconstruction of the letter as you thought it would read?" put in Mrs. Hilliard.

Merrivale was embarrassed. "Well, really, Major Burnett looked after that department."

It was my turn to flush. "Um," I stammered, "It was something like this:

Dearest Henry,

You must let me see you. My husband knows all. It is the end of our game. If the rent heart of a woman, intrigued by a cad, a Rotter, means nothing to you, remember I just love you: sneer at me, or make a false move, and I'll kill you on sight."

I paused and coughed. "We couldn't quite make out the 'sin' bit at the bottom, but of course now we know it was part of 'Yours sincerely'."

"And you really thought *that* of me, Major Burnett?"

"Well, I'm really awfully sorry, you know, we, that is,——" I commenced apol-

ogetically, but I never finished the sentence for I received the finest slap on the face it has ever been my pleasure(?) to accept, and Mrs. Hilliard swept indignantly from the room.

On Watch!

HILLIARD rated us soundly, too, for a bunch of damned idiots and altogether, my interest in mystery elucidation fell with a wallop. Merrivale seems rather pleased, no doubt because this little drama represented the destruction of the final link in the chain of evidence we had so magnanimously presented to him on his arrival. No doubt, now that he had so effectually blown down our house of cards, he felt he could start afresh.

As sleeping time was drawing near, it was decided to lock up the passengers in their cabins for their own safety, the officers, together, with Merrivale and myself electing to form a guard. As Merrivale was really the only man who could *not possibly* be guilty of the murders, he was given the keys of the cabin. And as everybody suspected everybody else, despite the fact that we had Fouchard locked up, the guard on each occasion was double.

First Minott and Merrivale were to keep watch, then Sheppard and Captain Brant, and in the final watch, McFee and myself. It was the most uncomfortable guard I ever was on. With three corpses in the refrigerator, and a homicidal maniac at large, or at the best only held from us by a flimsy partition, the patrolling of the eerie corridor was a sinister business. Add to the fact that one did not know whether one's mate on guard was the guilty party or not, and the horror of the whole business may readily be imagined. Of course, I was sure Dr. Fouchard was the man but then the Captain with a total lack of reason was equally emphatic that the Van Stokes woman had something to do with it.

When Sheppard awakened me to take my turn with McFee, I had, strangely enough, been dreaming of my old home in Somerset oblivious to the horrors of the preceding hours, but I woke curiously alert for all

that. I noted at once that the vanes of the door ventilator of Fouchard's prison cabin had been opened to their full extent, a matter of perhaps two inches each. I questioned Sheppard, but he simply laughed. If Fouchard was trying to escape that way, he wasn't likely to achieve much success. Besides, where could he escape to on a moon flyer?

Anyway, what were ventilators for but to let air in: he had no doubt opened the contrivance himself to secure more air circulation during the night! McFee was still sleepy. Like most Scots, he was pretty calm in an emergency. He certainly didn't seem to fear the murderer very much, for after patrolling the corridor with me once or twice, yawning the while, he sat down on a box, in a shaded corner, nodding in a somnolescent way which provoked my soldierly ire. Finding it useless to get the engineer to keep intelligent guard, I paced the corridor myself reviewing the situation as I did so.

COME to think of it it was damned funny that a man should be so negligent of his own personal safety as to go to sleep in this fashion. I had overlooked the fact that McFee had been working harder than any of us all the voyage out and was subjected to high temperatures all the time, but my mind was hardly functioning normally yet McFee's behavior told me only one thing at that moment;—that he had nothing to fear from the menace, because, of course, *he* was the murderer. I stirred him gently. He was fast asleep. I hurriedly searched his pockets. There was nothing to connect him with the crimes: some chunks of tobacco, a few valve tips and washers, a wallet with a photo of a girl in kilts, not a shred of evidence.

I paced the corridor again. This thing was getting me: I was perspiring. I felt an overpowering sense of horror: I could swear I smelt an earthly graveyard odor pervading the whole corridor. I could stand it no longer, I *must* have a stimulant. I made my way to my cabin. Confound it, I had pulled the door to, and that snap lock had shut. Merrivale had the keys too. I continued the pacing, reproaching myself

for my weakness. What conduct was this for a soldier? I squared my shoulders, but it was all of no avail. This wasn't a battlefield, and my nerves that had stood a thousand barrages, had gone to pieces under the strain. I *must* have a drink: I must! I must! Merrivale was sleeping, it wouldn't take an instant to get the keys from him. I made my way to his bunk. His door was open. Securing the keys was the work of a moment, and in another minute I was in my own cabin, gulping down neat brandy.

With a sudden revulsion of feeling, I realised what a coward I was. I made my way into the corridor again. Anyway, I'd better wake up McFee before I got a return of the blues. I hastened down to the engineer: the lazy blighter was still asleep, gone to the world, his head fallen forward on his chest. I shook him, but he never stirred. I gave him a vicious kick, and another and another. I raised his head, but it fell back on his chest again. A horrible fear assailed my mind. I dragged the Scot into an erect position, and shook him frantically: then in a frenzy, I pulled him into the better lighted part of the passage, and looked into his face.

The murderer had struck again: McFee was dead, and all round his throat were vivid purple marks, in symmetrical pattern, to show that the life had been choked out of the stalwart Scot.

I cried aloud in terror, and the others came running into the corridor, and then, well, it's hard for a D.S.O., to have to confess it, but I must have fainted, gone clean over.

CHAPTER V.

I Am Accused!

WHEN I came to, I was in my own cabin, and Merrivale and Galloway were looking at me with a queer sternness. I made to rise, when Merrivale suddenly covered me with his automatic.

"Oh, no you don't, my gallant Major. We've got you at last. You may as well make a clean breast of it. We can't figure out your motive, unless the Brazilian fever

has warped your mind, but we've got enough circumstantial evidence to convict you. I figure it out this way. You stole Fouchard's ring: you were the only person aboard who seemed to know it contained poison: killed Bratz, why, I don't know: polished off Olsen when we was about to call assistance from the Station, after doing a bit of curiously amateurish work on Johnson, just to fill in the time, I suppose.

"Then with devilish ingenuity you produced the mutilated note to Johnson, to incriminate the Hilliards. When Fouchard began to doubt your red herrings, you accused him, and showed his ring was missing. Then it was you, my dear Major, who managed to *find* the ring again. Curious coincidence, isn't it! But Fouchard knew too much for you: you hastily evolved a new plan. I may as well tell you now, I never suspected Fouchard: I locked him up for his own safety; but equally I made the tragic mistake of never suspecting you.

"I let you retain the ring pending examination, what a fool I was! In the night, you strangled your fellow-guardsman, stole my keys, unlocked the prisoner's cabin and killed Fouchard with his own ring."

"What," I cried, "Fouchard dead too?"

"What the Hades do you expect? Dead as a doornail. But the time for dissembling is over: we have ample minor proofs. For instance you're the only person aboard with the strength to strangle noiselessly a man of McFee's build; Galloway has told me all about your South American exploit with the puma, when you have him by throttling the brute with your naked hands. Now, we've got the rough outline, I'd like you to fill in the details."

For a long time I sat speechless, bowed down with this fresh horror. Fouchard dead too! Where was it all going to end? Of Merrivale's idiotic accusations I didn't think very much; we had pretty nearly all been suspected in turn, still, what a fool I'd been over those keys! Eventually, I told the truth about the whole affair. Merrivale smiled incredulously, but I could see that Galloway half believed in me.

"Anyway, Marshal, it's up to you to examine the ring. Three people are supposed

to have met their death through its agency, so there cannot be much poison left in it now."

Galloway took the ring, and carefully pressed the stones, catching the dripping fluid in a watch-glass. It was at once obvious from the quantity collected that the hollow ring must have been full of the liquor.

Merrivale frowned. "Proves nothing. The poisoner evidently has a reservoir from which he refills."

"Hardly applicable to me, considering I *stole* the ring, Marshal," I retorted. "But examine the mechanism of the ring. When the green stone is pressed inwards, two fangs protrude. In every wound I have examined on the bodies, there is but one puncture, not two. Again, the fangs protrude on the inside of the ring, not on the outside, the idea being that the would-be suicide pressed the stone while wearing the ring. It would therefore seem to be impossible to murder a person with the ring excepting by first placing the ring on their fingers, and then pressing the green stone. It is certainly obviously impossible to inflict wounds on the back of the hand, or the neck, such as we found on Bratz and Olsen, with this ring. Again, you accuse me of strangling McFee, but no human fingers ever made that symmetrical design on the engineer's neck. It is as though a broad hand of watered silk had been compressed with titanic strength round the Scot's neck, leaving a record of the pattern on his neck."

WHILE I had been speaking, Merrivale had been pacing up and down restively: he could see he was wrong, but did not want to admit it. Meanwhile, the professor was busily engaged in testing the poison in the watch glass. At length he turned to us: "I'm afraid I cannot tell you very much about this. It is certainly a rare reptilian venom, and in some respects may be said to resemble the poison found in the bodies, but the lack of suitable reagents on board forces me to confess that any accurate determination or comparison is impossible."

I turned to Merrivale, "Come, Marshal, I

think you must admit you are wronging me, but handcuff me if you like. I would like to see Fouchard."

"Well, Major, *somebody* must be guilty, you know, and it certainly looked black against you after that key business. By the way, why did you try to break down the shutters of Fouchard's door, when you had the key?"

"Um, suppose that's a trip question, but as I don't happen to be guilty it doesn't act. What do you mean?"

"Well, all around the ventilator there are small irregular holes, as though someone had been trying to force open the vanes with a screwdriver, or similar instrument. You know, something like the marks we found over Olsen's head, and on the floor by Bratz's body."

"Well, I know nothing about that, but I did notice the ventilator was open when I went on guard, and it was shut last night."

"And, it was tight when I concluded guard," agreed the Marshal. "Then the murder must have happened while the Captain and Sheppard were on guard."

Captain Brant and Sheppard were questioned closely, and when the Captain admitted that he had left the corridor on several occasions to attend to other duties, I could see that Merrivale had immediately pounced on Sheppard as the guilty one. But a mild form of third degree inquisition failed to produce any result, and in the end, we all tailed into Fouchard's shrine that was yesterday a prison, and the day before a cabin, to see if we could further elucidate the mystery.

Fouchard was sitting bolt upright in a chair in front of a small Sheridan table. He was facing the door. In his left hand he held a pocket electric battery pointing straight at the ventilator. His lifeless thumb had fallen from the press-button, so the light was no longer on, but had it been, the zone of the ventilator would have been completely illuminated. His right hand sprawled, with the index finger extended, over the table. On his face was a look of horror, but there was something more;—there was a look of recognition.

Without doubt, Fouchard had seen the

murderer, and what was more he had recognised him before he died. I had been standing a little to the left of the others when I noted a peculiar wavy line on the highly polished table by the Docteur's left hand. I drew Merrivale's attention to it, and standing behind Fouchard, we saw that the dull line travelled obliquely from left to right in a series of waves and terminated at the right hand. It could only be seen from certain angles, and—"My God, Major, it's a word," ejaculated Merrivale. "Fouchard has wet his finger, and written a message on the highly polished table top, knowing it would dry dull. See:—C—O—R—N—E—I—L—and then, the poison had done its work, I suppose."

"Um, took a long time compared with Olsen's case then," I could not help saying.

Not Murdered!

"YES, that's puzzling, but it's evidently a message: a *name*: by Jove, one of the Rutledges is called Cornelia, too. I have it! How blind I've been! Those young demons would do anything. Another Lœb and Leopold type of crime. Quite obvious, these two have had every thrill in the world: they've made the world hum with their mad caprices since they wore pinafores. That's it: sheer ennui, the motive. Jaded with the ordinary vices and jokes, they've planned this super practical joke on the world. All these deaths on a space-ship! What more intriguing, what more thrilling? Captain, arrest the pair of them at once!"

"One minute, Marshal, you know *Corneil* isn't the exact way to go about spelling *Cornelia*, you know, and anyway, I don't quite see how one of the young ladies could get through the ventilator, for you know, you held the keys. And again, you haven't solved the problem of how Fouchard lasted out long enough to write that word after being poisoned."

Merrivale glared angrily. "Um, you can't expect a Frenchman, even if he is a doctor of philosophy, to spell a damned outlandish name like that correctly: as for the keys, well if *you* could steal them, so could *she*."

"You forget she was locked in her own cabin by your own good self," I said testily.

Merrivale flew in a rage. "I've a jolly good mind to arrest you for obstruction, Major Burnett: what are these women to you? By Jove, I begin to see light, you are working wonderfully well, you are. I'm by no means convinced of your innocence yet, despite the evidence of the ring. You are right: Fouchard could not have written that word after being poisoned. No, you did, after you had killed him, so that you would throw the blame on the girl. But you are bound to have left finger prints on this table," and Merrivale began, with febrile haste, to examine the table.

I was not so much angry as amused this time. Despite the seriousness of the situation, there was something funny about the pendulum attitude of the investigator. Professor Galloway was really wild however, about this fresh accusation. He had just finished conducting an examination of the corpse, and he tackled Merrivale with all the vitriolic eloquence in his makeup in my defence. When he had concluded, he observed calmly, "And it may interest you to know, most perceptive of marshals, that Fouchard did not die of poison!"

"Not die of poison?" repeated the bewildered Merrivale.

"No, there is no trace of a puncture on the body, nor of poison in the blood."

"Then what the blazes did he die of?"

"Heart failure!" said Galloway tartly.

"Then, he,—he—wasn't murdered after all?"

"Directly, no: indirectly, yes. He undoubtedly saw something to horrify him: he undoubtedly recognised somebody, and saw clearly that they had come to menace him. He then evidently scrawled, or was scrawling the warning message when his heart succumbed to the shock."

For a moment, Merrivale hesitated and then:—"Well that bears out my first theory. We'll interview these young devils."

CHAPTER VI.

The Stowaway

THE Rutledge twins received us graciously. "Look here," began Merrivale brusquely, "There's been a couple of fresh murders through the night, despite the guard."

"Oh I say," put in Beatrice. "This voyage is getting too like the ten little nigger boys for my peace of mind!"

"Yes, well we think, that is (as he caught my frown) I think, you young ladies know a good deal about this. It may interest you to know that the latest victim left a message in which one of your names appears."

"Indeed, Mr. Detective," put in Cornelia, "How positively thrilling."

"Yeah, it'll be more thrilling still when we land, and the judge puts on his black cap."

"Don't be so damned silly," put in Beatrice, as she lit a cheroot. "You surely don't think *we* have got anything to do with this nasty sticky business, do you?"

"Of course we don't, *really*," I put in, "but unfortunately Fouchard, the latest victim, scrawled a few letters which read very similar to your sister's name, and we were wondering if you could throw any light on the mystery. I am afraid the Marshal's enthusiasm has evaporated his sense of chivalry. I can assure you the only person the admirable Merrivale hasn't suspected yet, is himself, and our inquiries are purely routine."

"I see."

"Do you by any chance happen to know Dr. Fouchard well? I mean—there's no hint of romance!" They both snorted and commenced to speak at once. From the babble, I gathered they had never seen the doctor before this journey, and thought him "perfectly horrid." No, he had never sought to pay either of them attentions, in fact, on the few occasions they had met, he had been rather rude.

This information rather upset a new theory I had been formulating,—that Fouchard had died from a perfectly na-

tural heart attack, and feeling life slipping, he had scrawled subconsciously the name "Cornelia," because he admired the girl.

How long the inquisition would have proceeded I don't know. Merrivale was getting ready to fire a few more shots, when a terrific din was heard in the direction of the galley. We all made our way in that direction, and were astounded to find Mrs. MacNamara belaboring a gigantic African negro (who seemed to have sprung from nowhere) with a quart bottle.

Merrivale pulled out his automatic, but the negro stood quietly enough, and gave no sign of resistance.

Mrs. MacNamara explained volubly that her stores of tabloid foods had been continuing to diminish with astonishing rapidity. Finally, like the bold woman she was, she had laid in wait, armed with the quart bottle, to see which of the staff was pilfering, and had been nearly knocked backwards to see the huge son of Ham emerge from the trap door leading to the hold.

Nothing daunted, however, she had attacked him right manfully, with the result that we overheard the row. The African's story was that he had been touring England with a travelling circus which had "gone bust", as he picturesquely termed it. He had tramped about the country for some time, and eventually had lit upon the space ship. Watching his opportunity he had crawled aboard and concealed himself, stealing out now and then to purloin the stores from Mrs. McNamara's larder.

Merrivale heard him out, then "And what is your name?"

"*Cornelius Twinkle, Sah!*"

Mr. Cornelius Twinkle in another couple of minutes was safely down the hold again, but this time with massive leg irons, and manacles about his herculean form.

HERE then, was the murder. We all felt relieved, most of all Merrivale, who was most amiable and apologetic. "Of course I had the stowaway idea back of my mind all the time, but I had to badger you ladies and gentlemen, in order to find out as much as I could. That's how we investi-

gators work you know! Anyway, we don't need to fear any more."

I had to confess I was puzzled as to motive, but Merrivale airily assured me that he had it all cut and dried. The negro evidently knew and hated Dr. Fouchard: but he had made a mistake on several occasions and killed the wrong men. To me this seemed a bit thin, particularly in McFee's case, but Merrivale was sure the Negro had strangled McFee, as he was the only person aboard, excepting myself, who had sufficient muscular development.

However that might be, there were no more murders during the next twenty-four hours, although I noted everyone paid great attention to the locking of the doors and the thorough closing and securing of the ventilators at sleeping time.

I couldn't sleep. For one thing, Merrivale had sniffed so avidly at every red herring which crossed his path, that the mere fact that we had discovered a stow-away named Cornelius did not seem to me at all convincing. To my mind, the crimes were the acts of a maniac, and the big nigger seemed a perfectly sane, and rational person. In fact, I took a decided liking to him from the first time I saw him. Another thing, if he was such a terrible being why had he refrained from attacking Mrs. McNamara? The more I thought about it, the more clearly I recognised that the Marshal, like most officials, was intent on getting a scapegoat first, and then proving that he did the crime. The advent of the big Ethiopian was no doubt like manna from Heaven to the bewildered investigator, who had seen clue after clue crumble to nothing. I verily believe, he had reached a point of such mental instability, that he would have accused Johnson's parrot had it been alive. Um, funny job that parrot's dying should herald all these murders! Of course, if people had just died it might have been a case of parrot-fever spreading through the ship, but there were stabbings, poisonings and a strangulation.

Very ill-rested, I arose at the appointed waking time, to join the others, who were overjoyed to find a full roll-call. We had breakfast in the dining room, and at this

meal we managed almost to capture a spirit of light heartedness. Merrivale was in fine vein, and was just recounting a thrilling episode in his career, when Minott dashed in:—

"Say, folks: the chunk of ebony's done himself in overnight."

Mrs. Van Stokes fainted immediately, and Captain Brant rebuked the purser for his tactlessness. Merrivale, Galloway and myself accompanied Minott to the hold. Yes, sure enough, the big nigger was a mass of congealed blood across his chest, and in his right hand he clenched a small but ugly looking knife. Merrivale was overjoyed: this put the crown on his work: proved the negro's guilt. Galloway on examination thought there was a spark of life in the huge carcass yet, so we began to unshackle the negro. As we did so, I noted that there was a nasty gash almost as high as the collar bone.

"Say, Merrivale, how do you account for this, when the half hundredweight hand-irons only allow the nigger to raise his hand a little above his waist, and they are unbroken yet? He no doubt had the knife concealed about his waist, but how did he make that wound: also, with a knife like that about him, why didn't he attack the stewardess, if he's the guilty party?"

A Big Black Crow!

THESE was no time to spend in argument however, if we were to fan the glow of life into a flame again. We bathed his bloody torso, with warm water, and then we discovered that there were not just one or two wounds, but that his whole chest was a mass of ragged tears; not clean cuts as one would imagine a knife to make, but jagged affairs, something like the wound in Johnson's neck.

The poor negro looked just like, well, like an apple that a bird's been pecking at. We bound him up roughly, and took him upstairs, meeting the Rutledges on the way. The sisters lost all their attitude of cynicism at the pitiable sight, and insisted on Cornelius being taken to their cabin, so that they could nurse him. Powerful restora-

tives were poured down his throat, the Lisle rays were applied, and every possible means we had aboard used to revive the negro, but though the man still lived, he remained unconscious.

Leaving him in good hands, I took my flash-lantern in one hand, and my automatic in the other, and stole back into the shadowy hold. I examined the stool on which the negro had sat, and the wall behind it. The former revealed nothing, but the wooden partition of a radius of perhaps a foot around where the nigger had sat was one mass of irregular indentations, as though someone had been playing a game of darts, with outsize weapons. Something like bad grouping with a machine gun, but the marks registered were ragged, not at all clear cut. The thought of a murderer using a kind of machine gun with some elementary form of bullet crossed my mind, but I dismissed the idea as too fantastic. One thing was clear, whatever had made the marks on the wall had made the wounds in the negro's chest, and very obviously he had drawn his knife, *not to slay, but to defend himself.*

I prayed that he might soon recover consciousness, so that we could learn the nature of the menace, for it was evident the murderer was still at large. I made my way back to the lounge.

There I found Mrs. Hilliard almost beside herself, with her husband and Galloway not very much better. Jackie had disappeared! They had searched every cabin, without result: not a trace of the youngster could be found excepting his handkerchief which was recovered by Minott about the spot where Bratz was murdered.

Well, there was nothing for it but further organised search. Armed with automatics, we split up into two groups, and commenced to search throughout the whole ship. Minott, Merrivale, the Professor and myself undertook to search the fore-part of the vessel. As we moved forward, Merrivale whispered, "Damned funny thing, Minott always seems on the scene of these affairs: he found Olsen, and the nigger: now, he's found the handkerchief."

Poor Merrivale, he would be suspecting himself next!

We searched here, there, and everywhere, but we found no trace. At length there only remained the little room in the nose of the ship, where the professor's fossils were stored. In the happier earlier days of the trip, Galloway had often taken the boy along here to show him the "funny beasties," and it struck me that possibly the child had felt a longing to visit the museum once more, and had, unobserved, slipped along. Sure enough, as we emerged from the shadowy bottle neck passage leading to the room, young Jackie emerged from the door, holding his finger to his lips. He had heard us coming and evidently did not want us to disturb something or other. When we got near enough, he said "Shush, you'll wake the funny animal!"

Galloway started. "The funny animal!"

"Yes, 'Fessor, one of your funny stone animals is breathing, I can see it's sides going wiggly woggly, and it has such a funny long tail and a head like a big black crow."

"A big black crow." Somewhere at the back of my obtuse mentality a subconscious train of thought was trying to burst through. I found myself repeating an old French lesson of forty years ago. What was it?

Bird—oiseau

Eagle—aigle

Buzzard—busé

CROW—C O R N E I L L E .

So that was what Fouchard meant by his message! *He was warning us against this thing with a head like a big black crow!*

Thrusting the boy into the passage, we entered the room with automatics drawn. A strong earthy musk-laden smell pervaded the chamber. At first we could see nothing, so gloomy was the place, and then we saw it.

A LARGE chunk of stone of the Mesozoic period, retained because of its covering of fossilised vegetation, had been split in twain, as though pried open, and there on the top of the pieces reposed the strangest living thing I have ever seen. As the boy had said it had a head like a big black crow, but its beak was the beak of a

flying lizard, a pterodactyl. Its body was fish-like, yet snake-like, but it had the peculiarity that it was practically two-dimensional. Although nine inches or more in depth, it was not more than a quarter of an inch to half an inch in thickness. The body terminated in a long snaky tail, while a couple of protuberances like fins folded close to the body. That the animal lived, we could not doubt, from the slight respiratory movements.

"My God!" cried Galloway. "The Mesozoic Missing Link!" The sound of his voice awoke the creature. It stared at us an instant with its malevolent cobra-like eyes, and then without warning, it spread its fin-like wings and soared with great velocity over our heads. Merrivale's automatic spat out, and the creature fell at Minott's feet. As it did so it curled its long tail round the purser's leg, and buried the sharp spine into the fleshy part of his calf. With a little cry, Minott dropped to the ground. We riddled the beast with shells, but poor Minott had gone to join the great majority, for the poison had been exuded from its sac through the spine of the creature's tail just as in the case of Bratz and Olsen.

As the creature writhed in its last agony the powerful beak struck the floor again and again, making the same kind of splintered marks we had observed so often before.

We covered poor Minott's face, and took the boy to his harassed parents. Then we all gathered together in the lounge and offered up a prayer of thanksgiving, for our deliverance from the menace.

There isn't very much more to tell. When Galloway, who was fearfully shaken by the whole business, had recovered a bit, we discussed the whole affair.

"You see," said the professor, "The study of evolution is even yet but in its infancy. For one thing, our fossil record is very incomplete. The oldest igneous rocks naturally yield nothing from their fiery origin: many of the earlier sedimentary rocks too, have been so denuded, or metamorphosed by the action of heat and pressure that they preserve no fossil records of the

creatures which roamed the Earth in by-gone days.

"All my life I have found the study of the evolution from one type to another intriguing, and the fact that when a higher type evolves from a lower the latter does not entirely disappear, is most interesting. Such survivals are sometimes called 'sports', the idea being that they are freaks of nature, but when we remember that in the Mesozoic period the reptiles were predominant, and these cold-blooded beings were of giant size, herbivores, carnivores, flying and marine forms alike; while in the following Caenozoic period the warm-blooded mammals attained ascendancy, and the reptile now only survives in the insignificant crocodile, snake or lizard, it can be seen that these 'sports' represent rather the gradual discarding of the former types. They are rather Nature's throwouts!

An Explanation

"**A** GAIN, while there are examples of sudden change and acquisition of new parts, to enable the individual to conform to altered environment, such as the development of bird-like forms from the reptiles of the Mesozoic period, there is not, as Darwin imagined, a clear-cut line of demarcation between species, and attributes of earlier species often linger after they have lost their usefulness.

"For instance, in the Eocene period, monkeys with arboreal limbs have yet teeth difficult to distinguish from the Eocene horses: carnivores with hoofs exist, and herbivores with sloth-like claws.

"It is these seeming paradoxes which make the subject of evolution so interesting to me, and it is in the study of the missing links of the chain that Major Burnett and myself have spent the last two years in South America, with what tragic success you know. The specimen which has caused all the trouble is undoubtedly a link between the birds and reptiles of the Mesozoic period. The scorpion-like spine of the tail must be looked upon as a further 'sport' of nature, probably surviving from a still older form, although we must admit that

as we reconstruct the dinosaurs from bony skeletons, we hardly know whether they were equipped with paralysing or lethal venom or not, although the provision of such would be quite logical."

"But, how did the damn thing come to life after hundreds of centuries?" put in Merrivale.

"Ah, that is where I owe Johnson, poor chap, an apology. You remember he spoke of a case of reptilian suspended animation. I had heard the tale before, and I am afraid I lost my temper for I always looked upon the yarn as of the Aesop vintage. In some sedimentary rock formations at Butte, a foreman and three miners swore affidavits (mind, this is a hundred years ago) that they they had chipped a toad, which they first took to be a fossil, from the solid rock. They then realised the thing was hibernating, but it was of a different species from any other they had ever seen.

"So they sent it on to the Bronx, New York Zoological Park, where the director revived the toad, and it ran about for a short time all alive and kicking, the director coming to the conclusion that it was an authentic case of suspended animation, the reptile having crept into the soft mud thousands of years before. With the passage of time, and pressure, the mud had formed stone, and encased the toad.

"I've seen the preserved carcass myself, but I never thought the story possible. But here we have had most terrible proof of the authenticity of suspended reptilian animation. What awoke the creature in this case, I know not: probably some unknown ray emanating from the operation of the atomic motors. The splitting of the stone is easily explained, as it is in easily divisible laminated strata, and we have had ample demonstrations of the reptile's strength."

"Yes, but I don't understand why it should adopt different methods of killing," said Merrivale.

"There is nothing inconsistent in that. Many creatures are armed with several types of natural weapons. A scorpion, for instance uses his poison spine tail to attack some creatures, and his strong claws to attack others. What I think actually took

place was this:—The creature escaped from its prison of stone and flew through the fore-part of the ship into the living quarters. Working late on his composition, Bratz heard the thing fluttering in the corridor, went to investigate and was struck on the hands, as he was trying to ward off the creature's beak attacks, by the venomous tail spine. The tears in Bratz's jacket were of course made by the beak.

"IN the case of Johnson, who always slept with his door ajar, it looks as though the creature maliciously attacked him in his sleep, and as the first blow severed an artery, he merely woke momentarily to give one cry. In Olsen's case, it had taken refuge in the radio room, and as Olsen turned on the light he saw it: that accounted for the look of horror. It must have been near him too, for while the mark on the jamb of the door was made by the beak it curled its tail around his neck and pierced the poor devil's neck with its poison-spine.

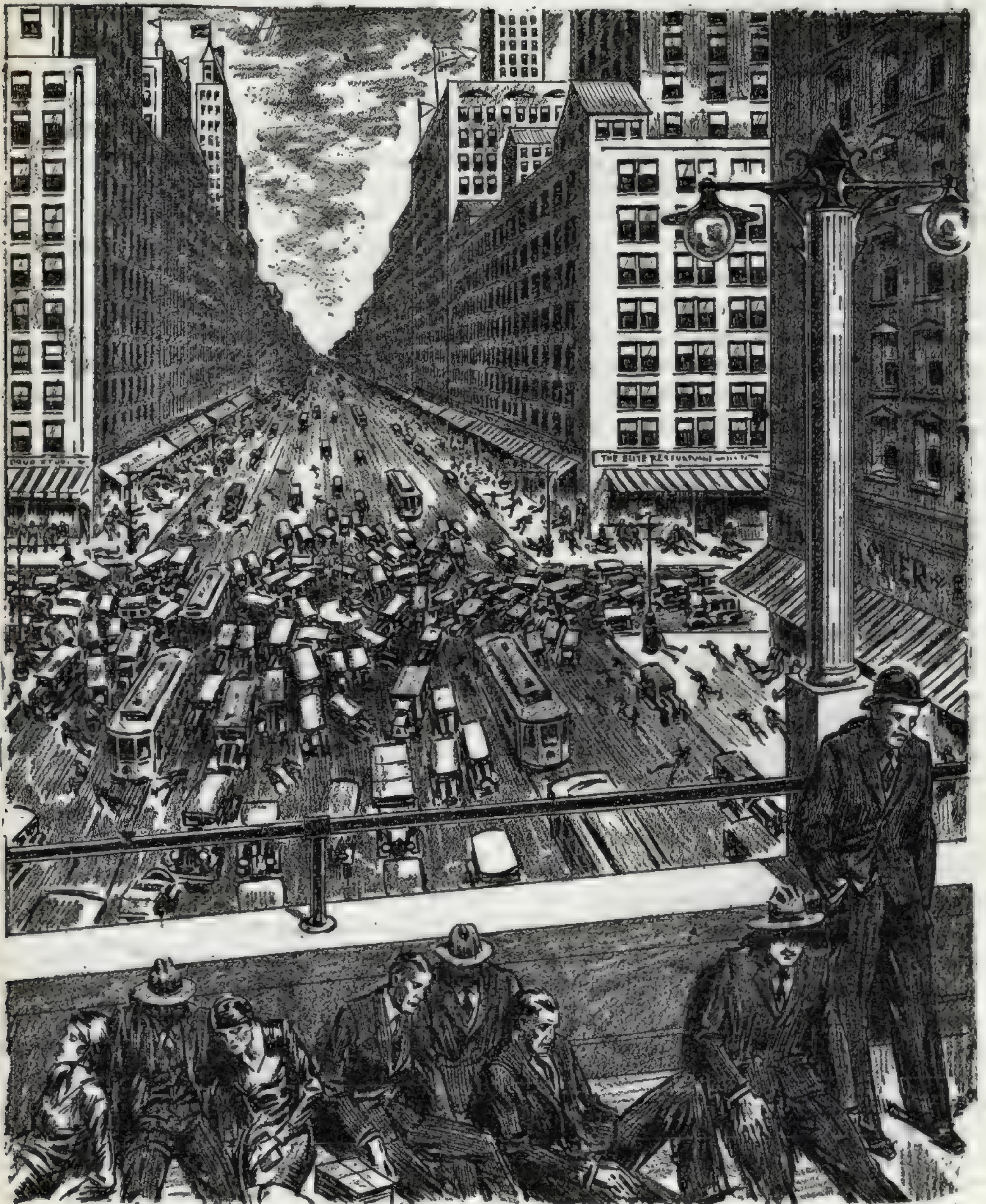
"In Dr. Fouchard's case it was different: the doctor was sitting at the table, undoubtedly disconsolately reviewing our unfair accusations of him, when he heard the creature, no doubt startled by something, trying to edge the vanes of the ventilator open. You remember that its body was practically two-dimensional. If it could get its head through, then the rest would be easy.

"Fouchard pressed the button of his torch and saw the creature's crow-like head being forced through the aperture. An intelligent man, he immediately connected the beast's appearance, (for he could readily see it was no ordinary crow), with the murders, and fearing his hour had come, he attempted to write the word *Corneille*, (crow) on the table to warn us. Then his heart, always weak, gave out. Either the animal was frightened by Fouchard's torch, or else, it couldn't get its head through, but it must have lurked about the corridor, perhaps under the very box on which McFee went to sleep.

"You remember, Burnett, you complained that the passage smelt earthy, like a grave-
(Concluded on Page 1040)

The Sleeping War

by David H. Keller, M.D.



(Illustrated by Marchioni)

They went into the city and saw the streets crowded with the inert forms—the traffic, now silent, a mass of confusion.
Then they, too, joined the lifeless throngs.

THERE was a Chinaman in town today," announced William Buzzard, the Recorder of Deeds of Monroe County. He slowly placed his feet on top of his desk and started to blow smoke rings through the dead air of the closed office.

The County Treasurer laughed at him.

"What are you trying to do, Bill? Kid me? Think I never took my collars to the laundryman? Long as I can remember there has always been a Chink in town."

"This was not that kind of a Chinaman," slowly retorted Buzzard, talking out of one corner of his mouth.

"That's news to me. Is there more than one kind of Chink?"

"You would think so if you ever saw a real one. This one today was only a yellow boy, but, believe me, Hankins, he had class. He drove here in a swell car and he had on the very latest in New York haberdashery, and I ought to know, because I just had a chance to read an article called, *What the well dressed man will wear in 1935*. He gave me this elegant piece of tobacco I am smoking.

"You will observe from the smell that it is no cheap five center.

And then, to show you that I know what I am talking about when I say that he had class, he had me record a deed for him which shows that he had just paid four hundred thousand dollars for the four thousand

acres of land around Resica."

"I'm dreaming! Wake me up!" murmured the County Treasurer. "You don't mean to tell me that the New York people have finally unloaded that Resica land?"

"I do. And I remember when I could have bought that land for five dollars an acre."

"All I have to say," remarked Peter Hankins, "is that they must have put the deal over when the Chink was asleep. I thought those yellow boys were smart."

"They are smart," nodded Buzzard. "Smart as the Old Boy himself. I have read about them and seen moving pictures about them until I almost feel that they are smarter than the average white man. I bet that this Chinaman had some reason for wanting that land at Resica. Perhaps he would have been willing to give more if the New Yorkers had held off a while. You will find out some day. He has something up his sleeve about that land. He knows something about it that makes him want to own it—oil or something like that. And I could have bought that land for five an acre."

A few days after the

deed for the Resica land had been recorded a well-dressed Chinaman wandered casually into the main offices of the Highway Department in Harrisburg, Pa. There was a slight difficulty in finding the correct official to

It often happens that some of the great advantages that men expect to gain by gathering together in large cities turn out finally to be boomerangs. People collect into communities of hundreds of thousands and millions to take advantage of mutual economic and social advantages; and give up their own identity so that they may have the strength of the whole group. They are thus better protected against disease and poverty. These of course are the assumptions. But when trouble does come to a large city, it comes as a great disaster. Epidemics of diseases, great fires, outbursts of crime, etc. are all prices that we must pay to enjoy city life.

Think how easy it would be to spread abroad in our great cities a contagious germ to decimate thousands! Or how easy it might be to poison our water supply. Suppose that a great evil force wished to strike at our national life, and he started with the large cities. How might he go about it? Dr. Keller answers this question in this story full of his unmatched humor, pathos and tragedy!

talk to, but at last he was in conference with a politician, who was smoking as fine a cigar as it had ever been his good fortune to light. With such a present in his mouth, it was impossible to be anything but polite to the donor; so, he asked, in his best manner, as he gazed at the visiting card in his hand:

"What can I do for you, Mr. Wand Foo?"

"I trust that my request is a very simple one," began the Chinaman, opening a map and spreading it out on the table. "Condescend to gaze upon this map of Monroe County. Here is a little place called Marshall Falls. From it a road runs through a thinly populated country and finally it ends up in Pike County, in what is called the deer country. This road runs through a four thousand acre tract of land, recently purchased by my associates. We regret the existence of this road, and desire your honorable aid in closing it."

The politician looked at the map closely.

"Where's your land?" he demanded.

"Around a place called Resica."

"Hemmm! There is a good iron bridge there."

"Exactly. The existence of the bridge annoys us."

"Well, it's there, isn't it?" asked the politician sharply. He was beginning to be slightly annoyed. "You knew that the road was there and you knew the bridge was there when you bought the land, didn't you? We cannot close roads and tear down bridges just to please people. How do you suppose the hunters would get up to the deer country?"

"If you look at the road carefully, you will see that there is another road that could be used. That road could be improved, and I am sure that it's immaterial to the deer hunters as to the specific road they use, so long as they finally arrive at the hunting ground."

"It cannot be done!" declared the High-

way Official, with an air of finality.

A PECULIAR smile played over the Oriental's face. He slowly pulled a red leather wallet from his inside coat pocket. Opening it, he took out a pile of bills, one of which he handed to the politician.

"Have you ever seen one of these?" he asked.

The Pennsylvanian looked at it, picked it up, looked at it again, and handed it back.

"It's a grand!" he murmured at last.

"It is. At least, I presume you call a thousand dollars in your currency by that name. Now, watch me. I am placing these bills, one at a time, before your honored eyes. When you feel that your Department could close that road and permit us to enjoy the privacy we desire, please indicate your willingness to cooperate with us. I presume you are sure of privacy? It would be so annoying to have visitors—while I am placing the bills in front of you."

The Highway Official hastily left his desk. He did not return till his office door was locked and the window shades drawn. Then and only then did he seat himself and whisper, "You can start your

argument." There was a slight trembling to his voice.

The Oriental took the sheaf of bills in his hand and, with a gesture that was almost grandiose, placed one of them in front of the politician. There was a slight pause, and then another bill was placed on top of the first, and then a third bill followed. Silently they fell like autumn leaves, only with a more definite regularity, as far as their landing was concerned.

The Official simply looked at the bills, trying to realize that each was worth a thousand dollars and that if he did not say "STOP" at the right time, he might fail to win one of them. Twenty-five—twenty-



DAVID H. KELLER, M.D.

six— twenty-seven. What was the Chinaman up to? What did he want to close the road for? Why? Thirty-nine— fifty-three— Was it the same wallet? Or had he taken another one from another pocket? Was that last one sixty-nine or seventy-three. Hell! He had lost count. Something snapped, and he heard the Chinaman speaking to him.

"I am afraid that you are no longer interested. Perhaps I had better take my money and leave. There are other pieces of land that we can buy besides Resica. We do not have to have Resica for our purposes."

"Oh! I am interested, all right," insisted the politician. "Just a little hot in here and I lost count. How many are there in that pile?"

"I am laying them down, not counting them," whispered the yellow man gravely. "Still, if you wish to, I will lay down some more. No doubt the money will have to be divided, and you will have to keep a little for yourself."

"If you only knew, Mr. Foofoo, how hard a thing like this was to put over, you would turn your pockets inside out."

"My name is Wand Foo and not Foofoo," explained the Chinaman. "Now, suppose we ask your honored attention while I continue to place the pieces of paper you think so much of on the pile in front of you."

Once again the gesture of placing the bills, one at a time, began. At last the official held up his hand,

"That will do," he sighed.

"And you will close the road?"

"Yes. Of course, it will take a little time. I shall have to see some of the boys, and talk the matter over with them."

The visitor arose, and bowed courteously.

"I thank you for your attention. I neglected to say that when the road is closed and all the details attended to, I will see that you have a sum equal to the small pittance I have placed within your worthy hands. I might add that if you fail, or try in any way to evade the terms of our gentleman's contract, your lovely wife will become your lovely widow."

Without A Gate!

JAMES Johnson was a hardened politician, but his hands trembled as he gathered up the paper money and jammed it in a tight wad into his pocket.

"Not trying to scare me, are you?" he sneered, as he started toward the door.

"I never try to do anything," murmured Mr. Wand Foo, as he sauntered towards that door. "At least I never try to do anything without succeeding. I shall expect the road closed, Mr. Johnson; either closed or the cash returned, and I am sure you do not want to return it."

The official slammed the door on his visitor and locked it. Back at his desk, he started to count the money. One hundred and twenty thousand! And the Chink had said that there would be as much more when the road was closed. How much would he give the other boys? And what did the yellow fool want the road closed for, anyway? Two times a hundred and twenty thousand made a quarter of a million. That was a lot of cash to pay for an old road. Well, he had better get to work. That was a mean thing to say about what would happen if he failed. He ought to have slapped the Chink in the mouth.

But a quarter of a million was a lot of money, even if a part of it had to be split off to other interested parties; so James Johnson lost no time in starting the strictly legal proceedings necessary for the abandonment of the road leading through the Resica property. Of course, the affair caused some comment, but relatively few persons were interested, and Johnson saw to it that the local newspapers made no great objections.

There followed a number of busy months at Resica. The road was not only closed; it was torn up. Several deep ravines were filled with the debris, which was in turn covered with several feet of rich earth and planted with laurel and rhododendron from the Stroudsburg Nursery. The road bed was also planted.

Soon there was but little proof that a hard-surfaced road had ever bisected the Resica tract. Then something more un-

sual happened. A contractor from New York appeared on the scene and started to run a fence around the four thousand acres. It was not an ordinary fence! The old people in Monroe County had been accustomed to fences of stone, of split rail, of barbed wire, and even of roots of pine trees, but this fence was a novelty to them. It was of wrought iron, twelve feet high, the tops ending in lance points of needle-like sharpness. Woe betide the man or animal who, attempting to climb that fence, slipped on the top!

Another peculiar feature of the fence, which was not noticed till it was finished and then observed by only one person was the fact that the fence had no gate! There was no place of entrance or egress! Work had been finished, all the construction material taken away, even the nearest neighbors had ceased to be interested in the strange behavior of the rich fools in Resica, before a single person realized that the fence had no gate.

CHAPTER II

The Story of Resica

LUKE Hoofer, East Stroudsburg philanthropist, was drowsing idly on his front gallery one hot afternoon in August, 1936. He was not an old man, but his life had been a busy one and he had reached the time when he appreciated long periods of relaxation. He had been born on Dutch Hill without a cent in his pockets, in fact without any pockets; and had attained wealth and some degree of local fame solely through his own efforts. He was somewhat surprised when he was aroused by the unexpected appearance of a nephew whom he had not seen for years. It was not to be wondered, that the first question he asked the young man was what he was doing in Monroe County.

"I am doing a little loafing, Uncle Luke," was Abe Summers' reply.

"Rather young for that, aren't you?" was the caustic answer. "When I was your age, I never loafed."

"Well, you know how to do it now. Ser-

iously, I am up here on a little mission for the Government."

"That so? Seems I did hear the girls say that you had some kind of a Government job."

"That is about right. That is one reason why I came to see you. What do you know about Resica Falls?"

"I know I could have bought it once for a few dollars an acre."

"I don't mean that. What kind of a place is it? Were you ever there?"

"I have been there several times," Hoofer replied. "First time when I was a little lad. I went up there and stayed all night. That was in 1880. When I was full grown I used to see it now and then when I was deer hunting. Lately one of my partners had a summer shack near the falls, and we used to go up there for Sunday dinner."

"Then you know about the place? Tell me about it?"

"In a way there is not much to tell. Way back in the last century some men from New York bought a large tract of land around a place called Moonshine Falls. There was a fifty-foot drop of Marshall's Creek at that place, and they figured that a lot of horsepower could be developed from the water falls. There was a fine grade of building stone there, and no grist mill for many a mile, so it seemed like a fine location.

"They were city people and must have put the cart before the horse, because they figured that if there was a mill, people would grow grain to take to the mill. I understand it was their plan to make flour and haul it to the Delaware and send it to Philadelphia by Durham boats.

"They dug the mill race and built the mill, and that was some mill, Abe. At least two hundred feet by sixty, with three-foot walls and as fine windows as I have ever seen. All the woodwork hand-made and nailed together with hand-forged spikes. They built over twenty-five stone houses for the working men and a mansion for the Boss, and when they finished they had a real town. Just then news came north that the States had won the battle of La Resica in Mexico. You see, we were fighting the Mexicans then, and that was big news,

just like the battle of Gettysburg, Manila Bay and Belleau Woods were later on. So, they had a big time and free eats and the New Yorkers decided to name the new town Resica instead of Moonshine.

"I don't know what happened to the town. I suppose they ran the mill for some time, and perhaps they never had grain enough to make it pay. At least, the place was abandoned by the time the Civil War was over; and when I first saw it, it had already decayed. Everybody moved away. There seemed to be some kind of a curse on the place; no one wanted to live there, and yet I never could find out why. And when the land was offered for sale, four thousand acres of as nice woodland as you ever saw, but no one wanted to buy it. I understand that it has been bought lately by some foreigners."

"**S**O, it is Marshall's Creek that makes the falls?"

"Exactly. The same creek that makes Marshall's Falls lower down, before it empties into the Delaware. You see, Marshall was one of the men hired by the proprietors to make the celebrated Indian Walk, the time the Indians were robbed of the Shawnee Flats. Right up there was where the walk ended. The Indians were never satisfied over that business deal, and I guess they were robbed in good fashion."

"Let me tell you something, Uncle Luke," said the young man in a low voice. "I was sent up here to look into the Resica business, and there are some peculiar details about it. I have just been up there, on foot. In fact, I walked around the outside of the four thousand acres. They have a fence around the whole place."

"I have heard about the fence."

"It is there, all right, and it is a real fence, too. I walked around it. Tied my handkerchief on one of the iron rods and kept on walking till I came to the handkerchief again. It is one of the finest fences I ever saw and must have cost some money—but there is not a sign of a gate."

"What's that?"

"There is no gate. I thought that there might be a removable section serving for a

gate, but I do not think so. There is just a fence; no way to go in and no way to go out except by airplane, and the place is all woods; so, there would be no place to land."

"That is rather odd," commented the old man, "but let me tell you this, Abe Summers. That is not the only peculiar thing about that place. First is the price they paid—four hundred thousand dollars, and it is not worth it. Then there was the matter of the road. They had the road closed and the bridge torn down. I don't know what it cost them, but I believe some of the county bosses made a good thing out of it, and no doubt the highway people at Harrisburg were in on it. Anyway, the road was closed. 'Course you know about the fence, more than I do, because I have not been interested enough in it to drive up to see it. From what I hear, those people have put about a million dollars into that investment, and that is a lot of money to pay just for land."

"What do they want it for?"

"How should I know? Summer resort? Lumber? Electric power? No. Nothing like that. Did you examine the deed?"

"Yes; but that does not tell anything. Just gives the price and the description and the parties concerned."

"It tells one thing, Abe," remarked the old man slowly, "and it seems to me that that one thing is the most peculiar thing that has happened at Resica for a number of years, and enough strange things have happened there. That place was bought by a Chinaman, by the name of Wand Foo. Anytime a Chinaman buys four thousand acres of land in the deer country of Monroe County and puts an iron fence around it, why, that is a matter of real importance. I am not working for the government, but if I were, I would keep the Chinaman in mind."

"I will do that, Uncle. Guess I better be going. Say hello to the folks for me."

"Where are you going, Abe?"

"Back to Resica. I am going to find some way to go through that fence, or over it."

"You will find that Marshall's Creek goes under it," whispered the East Stroudsburg

philanthropist, as he shut his eyes and went back to sleep. The young Government employe heard and remembered the remark.

The next morning he slowly walked up the road from Marshall's Falls. It was early in the morning but already hot, one of those days without wind, when the grasshoppers whirr through the air and the upper sky of deep blue is dotted here and there with dragon flies, darting like miniature warring planes after impotent foes. It was just hot, without a breath of moving air. Summers took things easy and at noon came to the end of the road, an abrupt pause emphasized by the tall iron fence. There was no sign of a road on the other side of the fence, just a forest of fern, shrub and trees. Turning to the left Summers followed the fence.

Under the Creek!

IT was growing dark when the sound of running water warned him that he was near Marshall's Creek. It was running at the bottom of a heavily wooded ravine, and he was tired from his all-day walk. He made a hasty supper of chocolate bars and peanut butter sandwiches, washed it all down with water almost as cold as ice, made a bed from some ferns, and had no difficulty in going to sleep. He was only thirty years old, but he had slept on the sands of the Sahara, the muddy shores of the Amazon, and the snow-clad mountains of Alaska. The fern bed alongside of Marshall's Creek was real comfort, compared with some of his couches.

The next morning he was ready for some more chocolate bars. The water was still cold, too cold to use for shaving with comfort, yet, true to his training, he simply had to shave before starting on the day's work. His belt was pulled up an extra hole, and he was ready.

"And I hope," he said to himself, "that I get something to eat before another day passes."

From close up the fence looked more formidable than ever. It ran down into the ravine, over the creek, and up the other side. It looked as though the iron bars went

down into the bottom of the creek bed. Previous experimenting had shown Summers that the bars of the fence went several feet into the ground and were connected there by many strands of heavy barbed wire. It all seemed very difficult; in fact, impossible to get through. In order to obtain a better view of the top of the fence, he lay back on his bed of ferns. Just then he heard a squirrel scold and a blue-jay cry. Across the ravine he heard a twig snap. Raising his head cautiously, he saw a man at the top of the hill, on the other side, and that man was walking down into the ravine, along the inside of the fence. Summers hardly breathed. He was glad that the ferns and shrubs around him were so thick. Even after the man had gone for fifteen minutes, he still lay there. Then he cautiously sat up.

"That was a sentry," he exclaimed. "Those people are patrolling the fence. And unless I was dreaming it was an Indian, and what is an Indian doing inside the fence? An Indian working for a Chinaman! Some combination! But now is the time to cross the fence. Wonder how cold that water is?"

Rapidly undressing, he tied his clothes into a bundle and threw it over the fence. Then he dived into the creek. The plunge took him to the bottom of the creek bed. He was hunting for something that he was not sure existed, an opening under the fence, made by the swirling water in the spring freshets. The first time under brought no results except to show him that the bottoms of the bars were as sharply pointed as were the tops and that there was a lot of barbed wire in between. Again and again he went under, each time at different places until at last he found what he was looking for, a place where he could go under.

It was a chance and a rather desperate one, but one worth taking. He came out on the other side, fighting for air, and shivering from cold, his back badly cut by the barbed wire. The warm air felt good after the cold water. His clothes felt good. He was hungry and tired and sore, but the important thing was that he was inside the fence.

The next thing was to go to the falls. Resica Falls, where the mill race was, where the grist mill and the village of twenty-five houses had been built during the Mexican War. Resica, the mysterious! There he hoped to find a Chinaman and an Indian, and there he hoped to find an answer to the mystery of Resica.

HE followed the course of the creek, satisfied that it would lead him to Resica Falls. At or near the falls he was sure that he would find the new owners of the property. His course was slow, not only because of the necessity of caution, but also because he was held back by berry briars, large rock, and rhododendrons so thick that the place well deserved the name given it years before by the early settlers of Devil's Hell. It was hot in the woods, and he was tired and very hungry by the time he heard the sound of falling tormented water, which announced his proximity to the falls.

To his surprise, he saw a small bungalow ahead of him, and remembered his Uncle's saying that one of his partners used to have a summer camp at that part of the property, just on the other side of the iron bridge. The bridge was gone, but the little house remained, and was, no doubt, in use.

Abe Summers belonged to the new school of detectives, who believed that a straight line was the shortest distance between two points. At times their code is a dangerous one, often it results in the unpleasant death of the operator, but always there is a gamble in it that makes life worth living and more often than not it brings results.

The old style detector of crime would have secreted himself in the woods, spied on the house and the inhabitants for some days, formed conclusions as to their activity which way have been right, but just as possibly wrong, and would have avoided any contact with the parties being observed.

Summers was hungry and tired; he had accomplished one of the objectives of his program and had reached Resica Falls. Now he walked up to the door of the little house in the woods and knocked. No answer coming to his summons, he opened the door and walked in, through the little

rooms—No one there; but there was a comfortable chair, and on the table in the back room a meal, apparently served for one person.

"And that person is Abe Summers," acknowledged the detective to himself. "I admit that it is not the act of a perfect gentleman to eat without being invited, but I am hungry. Besides, there are certain features about this house and this meal which makes me wonder if I was not expected. A man who spends a million to insure privacy has, no doubt, a very efficient secret service of his own. And there was the Indian. Not surprising to see an Indian, but it was a thrill to see him roam through the primitive woods, dressed in the costume of his ancestors."

He ate slowly and then cleaned up and washed the dishes when he was through. After that he walked leisurely through the house, examining everything thoroughly but disturbing and touching nothing. He spent over an hour studying a large map of New Jersey and Eastern Pennsylvania. It took him a long time to grasp the meaning of it, but at last he began to smile and relaxed in the comfortable Morris chair, which seemed to be provided for his special comfort.

"Very clever," he acknowledged to himself. "Remarkably clever. That explains the absence of a gate. Now that I am warm and fed and a part of my curiosity satisfied I think that I will take a little well earned sleep."

CHAPTER III

Wand Foo Explains

IT was late when he awoke. Candles in a silver candelabra were burning on the center table. On the other side of the table a man sat, his fingers interlaced, his gaze directed into vacancy. Summers took out his watch, looked at the time, wound it and replaced it in his pocket.

"I fear that I overslept myself," he stated simply.

"When I saw that you were asleep, I did

not wish to disturb your honorable person, Mr. Summers."

"You know me?"

"How could I forget an antagonist of years past! Surely you recall your activities in China, when you gathered details concerning our Russian friends? How can you forget Wand Foo?"

"I have not forgotten him," confessed Summers.

"I am so glad," purred the Chinaman. "Ever since you blocked my game in China, I have had you on my mind. When we came to America, I hoped that you would be selected by the Secret Service to investigate our activities. Not that it made any difference, you understand, but I felt that it would add to my pleasure to have you interested in our plans. Everything worked out nicely, and now you are our guest. I am sure you will be pleased to meet some of our compatriots, strange bedfellows in a way, but united by a common bond of hatred."

He clapped his hands and two men came from the doorways of the room where they had been concealed in the shadows. The Oriental introduced them.

"This swarthy gentleman is Georgius Sergiov. You can call him George for short. It will be so intimate and informal. He represents the great Russian republic, and comes to America, thoroughly committed to aid us in every way possible. When the time is ripe, his countrymen will come to the United States and reorganize the country according to their own ideas of equality and fraternity. At present this is a rich land, but when we finish it will simply be a province of a new nation yet to be organized; when the time comes, however, for this to happen, the directing force of that new world empire will be in Russia."

"And not in China?" interrogated Summers.

"Ah! The question of a cunning diplomat in trouble; and starting at once to raise discord among his enemies. Why should China crave power? We were cultured gentlemen when the Slav was a painted savage and the Anglo-Saxon a skin-clothed animal. We were writing and using gunpowder

when the other world nations were in the stone age. Our history was lost in antiquity when Egypt was in her swaddling clothes. China can wait. China has always been able to wait. Four hundred million population and dying like flies, but back of those yellow flies a national consciousness of world supremacy. We are willing to allow Russia to occupy America.

"This other gentleman has a rather difficult name to pronounce, but in English it means Troubled Water. He is a full-blooded Indian and as such is more entitled to the name American than you or any of your people. His being here has a singular history. He is a lineal descendant of the Indian tribes who once owned all this land. They were cheated out of it, badly deceived at the time of the Indian Walk. His family lived here at Resica. Naturally, they never forgot the treatment accorded them by the white race. For four generations they have been made to live on the western reservations, but always they remembered their home. When the time came, they returned to it—not all of them, of course, yet all who were left of the family.

"But Troubled Waters retained the traditions of his family and their knowledge of Resica and the falls. After he became rich from the sale of his Oklahoma oil lands, he traveled and I met him in China, and after we talked matters over we became friends. He told me about the falls and the tunnel, and I saw possibilities enough in the idea to propose a certain plan to the Russian government. So we three are here, just the three of us, and now you have joined us."

"**A**ND that makes four," commented Summers.

"And I am sure that you will be interested in our plans, Mr. Summers, because you have always had such a flair for being interested in other people's business. Briefly speaking, we are going to conquer the United States. Just the three of us. Is not that interesting? Of course, our armies, later on will come into the country and mop up the place, but the main work will be done by the three of us."

"But I thought there were four of us?" asked Summers.

"You are going to be just an interested spectator. Remember that we did not invite you. Since you are here, however, we intend to have you stay. Here is our plan. Centuries ago a race, who lived here before the Indians, built a tunnel from Resica Falls to the ocean. At the far end we have a very pretty summer home built, and no one, not even the clever Mr. Summers, would suspect that one could walk from the cellar of that home to Resica Falls. Our precious supplies are being carried from there. Someday Government officials may come to our iron fence and demand admission and we will very gladly let them in and show them everything, but at the end they will have learned nothing.

"Our machinery is very simple. At the top of the falls, at one side, in a cave, we place the barrels. One at a time these are connected with a little silver pipe which empties the contents of the barrel, a drop at a time, into the water just as it dashes over the falls to mingle with the Troubled Waters. That is the part of our Indian friend so very much enjoys. He sits there and watches the drops disappearing so evenly over the falling water. His race died that way, one at a time, like dropping water, or falling leaves in autumn. Now, as he watches the medicine falling into the water, he sees the doom of the descendants of the people who destroyed his ancestors and robbed them of their homes.

"That is our modern method of making war. Did you know your nation was at war? No doubt you are ignorant, but war has begun. We have started now—the drops are falling, sixty a minute, and thirty-six hundred in the hour. Soon we will have results in Philadelphia, and the smaller cities around Philadelphia. Then we will do the same thing to New York, and New Orleans, and Los Angeles. And when the morale of the people is destroyed, when fear covers the land like a panic, then our troops will move in, how—you need not know. But it means the end of the war."

"That is very interesting, but I am not sure of your conclusions," said Summers.

"I cannot see how three of you can accomplish all that disturbance."

"You weary me with your arguments and objections," answered the Oriental with an air of finality. "Friends, suppose you show him the pipe and the barrels and then place him in the tunnel and lock the iron gate. I might say, Mr. Summers, that the tunnel is many miles long and you can wander through it as you wish. At the other end you will also find a gate; so, you can stay there and think, and while you are doing it, your nation will begin to die."

The detective saw that resistance was useless. These three men were not in any way ordinary beings. Life to them was a commonplace, murder a banality. For some reason they did not kill him at once, but he knew that they would change their mind in a split second if he showed resistance. He allowed them to search him, and followed them into the twilight.

The last rays of a setting sun were turning the boiling water of the falls into a fairy land of fantasy. The three of them, the Russian, the Indian and the young American, walked through the wood till they came to a little shining pipe which seemed to come out of the rock on one side of the falls. The free end hung over the falling water.

"The barrels are in a cave over there," growled Sergiov. "The Chinaman said we were to show you the barrels, but what's the use! I think he must be foolish to even let you live."

"If I had my way," commented the Indian, "I would take him out on that rock and slit his throat and let his blood join the medicine. Still, orders are orders, and I suppose we might as well carry them out. But what the idea is, is too much for me. Come along with you. Have you the key, Sergiov?"

"I have the key, and here we are," announced the Russian. "Orders were to turn him loose in the tunnel, but nothing said as to how." With that he struck the detective a crushing blow on the head with a blackjack.

It was hours before Summers really knew what had happened to him.

The Great Epidemic

THE events of the next two weeks will always remain as one of the great tragedies in American history. There had been previous disasters by war, fire, flood and tornado. Cities like San Francisco had been leveled by earthquakes. Other cities like Chicago razed to the ground by fire. But never before had two million people gradually gone to sleep and kept on sleeping.

The first cases were so scattered, and so unconnected that the real peril of the situation was not realized. Here a few and there a few of the people of the lower Delaware Valley went to sleep and could not be aroused. The next day there were hundreds more of the sleepers, but even then the symptoms were so mild, the sleep was so natural, that there was no realization on the part of the authorities as to the meaning of it all. In fact, it was not until the epidemic had taken thousands into the arms of Morpheus that real apprehension began.

It was thought at first that it was a widespread epidemic of *lethargic encephalitis*.* But certain symptoms of that disease were uniformly absent. In fact there was no symptom except a natural sleep, perhaps heavier than usual. The women and children seemed to be the first affected, and they, simply feeling drowsy, went to their beds. The men, because of a greater resistance, were the last to be overcome. Inside of a week, over two million persons were asleep.

It meant an end of all activities in the great city. Transportation stopped, the production of power ceased. Commerce, the ordinary relation between people, came to an end. The waitress in the restaurant, the mechanic at his bench, the broker at his desk, the surgeon operating on his patient—one and all became sleepy and yielded to their desire to rest.

It did not take long for the great medical minds of the nation to realize that something terrible, menacing, deadly, was at

work in Philadelphia. Two things had to be done. One was to take proper care of the victims, the other was to determine just what was causing the sleeping epidemic.

It is to the credit of the medical fraternity that at this time there was no end of volunteers who went into the doomed city to care for those who lay in a death-like trance. The greatest medical minds of the nation volunteered to determine, in spite of the obvious danger, the cause of the epidemic. They went into the city, saw the streets crowded with the inert forms—the traffic, now silent, a mass of confusion. Then they too joined the lifeless throngs. Few returned to tell the story.

The thought of a great city, devoid of all protection, helpless to the last degree, stirred the imagination of the underworld. At once a small army of degenerates, reckless to the last degree, gamblers all, moved like a devastating army towards the city of the sleeping people. They went to rob and they remained to sleep. On the streets, with their bundles of loot beside them they fell down to their tortured dreams, victims of the same dire fate that stilled the activities of their intended victims.

It was felt that in spite of the best intentions little could be done for those already suffering from the weird disease. The Government threw a line of soldiers around the city and finally forbade either entrance or egress. Ships evaded Delaware Bay. A silence, greater than even the silence of the dead, hung over the dreaming metropolis.

A nation trembling from sympathy exerted all its mental resources to solve the problem that had destroyed the consciousness of one of its great cities. The world, apparently a unit in sympathy, offered any resource at its command. Philadelphia, long jeered at as the sleepy city, was remembered at a thousand altars in prayers as earnest as they were impotent.

And then a message came from the Soviets, the Red Nation of the World. It suggested that other American cities in addition to Philadelphia might fall asleep; and offered as an alternative submission to a peaceful conquest by Russia and China.

*A variety of brain fever known as "sleeping sickness."

THE message was delivered secretly to the President of the United States. Whatever his motives, his decision was to keep it secret. There is no doubt that had he done otherwise, a national panic might have resulted. Millions of men were still out of work, the classes were disturbed over the Philadelphia situation, the masses were ripe for revolt. Rightly or wrongly, the President decided to allow a few days to lapse before arriving at a decision.

Meanwhile, the Coast Guard of New Jersey had taken an unconscious part in the course of world politics. They had had under observation for some months a very ornate, but isolated summer home. It was, according to their conclusions, the headquarters of an aristocratic set of bootleggers. Now and then a ship steamed in and unloaded a number of small barrels which were carried via boat and wheelbarrow to the summer bungalow. In spite of their closest watch, they had failed to see any of it leave the house for distribution.

A wild night had been selected for the unloading of the next lot of kegs. The Revenue Officers were on hand and the attack on the house was a perfect success. The Russian crew were captured, and in the cellar of the house two Chinamen escaped a similar fate by committing suicide. The Guards were just leaving the cellar when they heard a call for help. Following the sound, they came to an iron gate hid behind some empty kegs. A hoarse, feverish voice cried to them desperately and explained to them that the keys to the gate might be obtained from one of the dead Chinamen.

A few minutes later Abe Summers staggered out into the cellar and collapsed on the floor. The first thing that he did on recovering his consciousness was to go to the telephone and tell Mr. Wand Foo, in very excellent Chinese, that the ship had just come in and had succeeded in landing thirty-seven kegs of the drug.

Summers had not been very happy. The days spent in the tunnel, with an iron gate at each end, had been tortured years. He had found water in abundance and a few living things, like salamanders, and toads. He had groped his way through the dark all

the distance from Resica to the shore of the Atlantic Ocean, only to find another gate. His life had been an adventuresome one, but never before had he come so close to the consciousness of death. And his sufferings were made all the more horrible by his realization of an unknown danger which, in some way, was threatening the people of the Delaware Valley and which danger he was unable to prevent.

Now, for a wonder, Fate had not only saved his life but had placed him in control of one end of the tunnel. First, he made the effort to keep the three conspirators in ignorance of the fact that the outlet to their fortress in Resica was in the hands of their enemies. The next thing was to find what had happened to the people of Philadelphia during the long, tedious, tormenting days he had wandered, a hungry desperate man, in his tunnel prison.

It did not take long for the Coast Guards to answer his eager questions. The people of Philadelphia and the vicinity had fallen asleep, victims of a peculiar and terrible epidemic that, up to the present time, had not even been given a name. That was it! That was the explanation of the liquid dropping through the silver pipe into Resica Falls! Even though greatly diluted, it had drugged the city. It must have taken so little to produce such mighty results; and there were many barrels left. Thirty-seven had been landed that night. Enough, if properly distributed, to numb the sensibilities of the nation, certainly enough to so stagnate the life of the great cities so that the conquest of the United States by the Soviets would be simply a matter of time.

Summers sat in a chair in the summer bungalow and thought it all out. The Russian and the Indian were just pawns in the game. Wand Foo was the real brains. It was the Chinaman who had formulated the attack. It was his shrewd brain that had determined just what drug to be used. It was, no doubt, something that was unknown to the Occidental pharmacist. The yellow man had boasted of the superior knowledge of his countrymen.

Summers was a detective, not a physician, but it did not take a medical mind to leap

across the picture puzzle and arrive at the next step in the solution. If Wand Foo knew the poison, he also knew the antidote. There was only one thing to do. Get the man and make him tell!

CHAPTER IV

Tracks of Mud!

THE detective slowly ate crackers and water, sweetened with sugar. He was weak, but, gradually, as the sugar began to circulate through him, he began to think more clearly. The only way the Chinaman could be taken alive was by surprise. Even if Resica was captured, there still remained the long, dark primitive tunnel, a bad place to capture a man in, especially if the man was desperate.

Summers felt peculiarly alone. He had been sent out by the Secret Service with the instructions to clear up the Resica mystery. The final statement made to him was that in no emergency was he to do anything that would cause publicity. It was to be a one-man game. And more than ever did the detective see the wisdom of this advice. If the peoples of the United States learned the real facts, war could not be prevented and war with Russia, China and Mexico would mean war also with Japan. It might be a successful war and, no doubt, it might be a popular one; but it would mean the loss of millions of lives. It would rock the peace of the world.

Meantime, the Coast Guards were growing more curious. They felt the air of mystery, and were anxiously awaiting the time when they could ask a thousand questions. It had been useless to question the Russian prisoners, but who the starved white man was who had shown them his Secret Service badge, and what interest he had in the boot-leg game they did not know. Whom had he telephoned to? Summers could not satisfy their curiosity.

"You'll have to consult my Chief," he explained. "But I will say that these men caught me and nearly starved me. Lucky for me you raided the place when you did. Better be careful of that liquor. Not or-

dinary stuff, by any means. Give me a gun and let me watch these foreigners while you go and report the affair to your Headquarters."

He spoke with an air of authority, and they believed what he said. When they came back, they found two dead Russians. There was a note pinned to one of them with the simple explanation that they had tried to escape. The detective was gone. It was not till some minutes later that some one suggested that they look in the cellar. When they did so, they found that the iron gate was locked. Outside the house they found the muddy tracks of a motorcycle—leading to the cellar door.

They were members of the Coast Guard, but they were also very human men. The statement made to them that the liquor in the barrels was no ordinary stuff interested them. They tried some. When the relief Guards came, they found two dead Chinamen in the cellar, two dead Russians in the parlor and three sleeping Americans in the kitchen. There was no one left to tell the story of the starved man in the tunnel.

* * *

Wand Foo was rather happy. He had every reason to believe that the morale of the nation was badly undermined by the calamity in Philadelphia. Thirty-seven more barrels of the drug had been successfully landed in the summer home which secreted the other end of the tunnel. Summers, who had done him great harm in past years, was slowly starving to death in the tunnel. Perhaps it would have been best to take the Russian's advice and killed him at once, but it certainly was pleasant to think of his slowly dying, with ever-increasing hunger gnawing at him like a fox. Everything was working out nicely, but there was one thing that worried him and, try as he would, he was unable to determine what it was.

He wondered if he was growing old, losing his cunning? In the meantime, he formulated plans for the attack on New York City, an assault that would end in the sleeping death of eight million persons. Perhaps after that the President of the United

States would realize that it was best to answer letters from foreign nations.

SUMMERS had had one experience with the prehistoric tunnel. Bleeding from the scalp wound from the terrific blow of the Russian, he had recovered consciousness in that tunnel and had staggered under the Delaware River and under the width of New Jersey only to find at the end of a wild delirious, staggering walk there was an iron gate at the other end. During those days of starvation, hope had remained in his heart for no other reason than the fact that he was an Anglo-Saxon, fighting for the very life of his country.

For the second time he entered the tunnel, but this time he went in voluntarily, wheeling a somewhat muddy but serviceable motorcycle with an excellent head lamp to light his way on the wild ride back to Resica. He had locked the gate behind him, because he did not want any interference with his plans. He had also two automatics and plenty of ammunition, several packages of crackers, a can of sardines, and unlimited hope. He was not sure that the key to one gate would unlock the other one, but he hoped so.

Back of his anxiety to return to the Falls was a curious interest in the tunnel. He had been told that it was very old. Now, with the light guiding his way, his hands gripped about the handlebars and the roar of the machine filling the cave, he was able to confirm this statement. The floor was worn smooth by the millions of feet that long centuries ago had walked from the Ocean to the Falls. On the walls were rude carvings of animals who ruled America when the Gulf of Mexico began at St. Louis and who now remained only as rock pictures and fossil bones. Summers determined that he must not be the last one to travel through that tunnel. When this "little affair" was cleaned up, he must make the existence of the tunnel known to the Smithsonian Institution.

He chugged on and on with the regularity of a machine. There were short periods of rest to be rid of the deafening roar of the machine; and scant periods for eating. At

last, with a sigh he saw cracks of daylight at the other end of the tunnel and heard the thunder of the falls beyond the gate. Daylight indeed, but little more, for once again in his mind he saw Resica at the close of the day, at the crimson purpling of a sunset.

Now for the key! Would it open the gate? It did. Summers took that as an omen. From now on it was to be a poker game, but the cards were stacked. One man against the representatives of three great nations, two living and one dead; and the one man held all the aces.

He locked the gate behind him. His first thought was to stop the constant dropping of the drug into the water. After that was done he would attend to the Russian and the Indian. He was no longer a calm, methodical detective. He had become, from necessity, a killer.

Lady Luck was with him. Troubled Waters was lonesome and a trifle bored. There had been long periods of complete inactivity and a gradual deepening of the feeling that the Chinaman did not consider him a vital factor in the program prepared for the conquest of America. He was not even confident that if those plans were carried out successfully, the remnant of his nation would be happier or more prosperous. He had seen something of the Russian temperament in the last few months, and he was not sure that the Russian would be as kind a ruler as the Saxon had been.

He had hoped some day to be able to live at Resica, but who was there to live with? His race was almost gone. There was not a pure blooded Indian maiden in his tribe, and the half breeds would rather live in New York than amid the solitude of Resica.

He sat cross-legged on the rocks at one side of the Falls and thought over these matters. The thunder of the water lulled his caution, while the shimmering sheen of the sun in his eyes hypnotised him into a twilight sleep. He awoke for a second with the crash of a bullet in his brain, died as he plunged downward over the falls and went to sleep eternally in the dark green of the whirlpool below.

"And now for the Russian," whispered

Summers, as he started to walk to the little bungalow. Luck was again with him. The two men he was hunting for were in the living room, laying their plans to leave Resica the next morning. They were seated on opposite sides of a table, and the Russian was facing the window.

A Lesson in Torture

"**I** HAVE it now!" cried the Chinaman, with a complete departure from his usual suave manner. "Something has been troubling me, and now I know what it is. We will not wait till tomorrow to go to the cottage by the ocean. We will go tonight. Listen to me and learn how the little things of life are of the greatest importance. My servant telephoned to me that thirty-seven kegs of the poison had been successfully landed and were stored in the cellar. But that servant is a well-educated man. He has the blood of Mandarins in him and was educated in England. He spoke to me in Chinese, but one phrase he used was not inflected in exactly the manner of a Mandarin. I heard that phrase, but my mind slept. Now it is awake. Georgiov, that was not my servant who spoke to me over the telephone."

"Then who was it?" asked the Russian, somewhat annoyed at the sudden garrulous behavior of the Oriental.

"That was none other than my friend, Abe Summers."

Just then a shot filled the silence of the room. The Russian slumped in his chair and dropped to the floor. Once again the killer, fighting for the security of his country and not willing to take a single chance, had spoken.

"And do not make a single false move, Wand Foo," commanded Summers, "and you better keep your hands up till I frisk you. I do not want to kill you, but I may have to, if you don't behave."

Had the Chinaman been dealing with a stranger, he would have taken a chance, but he had come in contact with Summers once before. He felt that for the present he was in a precarious position. At any moment he expected the Indian to come, and then,

even with the Russian dead, there would be two to one. Summers might be persuaded to talk; the white man might be bluffed, outwitted. Wand Foo hoped for the best, but at the same time, obeyed the command and raised his hands.

The detective tied those hands with the Oriental's own sash. He tied his feet and body to the chair with a rope he had carried with him from the sea-side bungalow. When he finished, the Chinaman was trussed in no uncertain manner. The dead Russian was dragged into the next room, the center table pulled to one side, and then Summers started to talk.

"No use to spill a lot of words, Wand Foo. I know what you tried to do to my country. In spite of your efforts I lived on, though I nearly starved in the tunnel. Now I am back, and I hold all the aces in this poker game. Poor Troubled Waters is dead at the bottom of Resica Falls. Your Russian friend is dead. So are your people on the Atlantic Coast. Just you and I left, and you are rather helpless.

"Now, I know that you are no fool. You know a lot more than I do—about some things.— You know all about this sleeping drug you have put into Resica Falls and from there into the Delaware River. But you know another thing about that dope; you know the antidote. *And you are going to tell me.*

"Of course you will refuse. You think that I will kill you and then you can save your face, and join your honorable ancestors. I would not think of killing you, not all at one time. But when you had me in your power in China some years ago, you gave me some personal lessons in torture. Do you remember? Well, I am going to pay you back—teach you the same lessons, and maybe show you some new tricks; but just as soon as you tell me how to save those unfortunate sleepers in Philadelphia, I will stop the education. Now do you understand?"

"You cannot torture me, Mr. Summers," announced the yellow man with a smile. "You are a white man, and white men do not use those methods. You would kill me, but you would not torture me."

"Is that so? Well, all I can say is that you better watch me for the next hour. You are going to tell me what I want to know, and I know that you are going to. In the meantime, I will build a fire in that fireplace and start to work."

HALF an hour later Wand Foo agreed to come across with the information. He was not at all happy, for various reasons, but the part that hurt the worst was the consciousness that he had made a mistake in estimating the character of an Anglo-Saxon who was aroused.

Both men were sweating. No one will ever know what Abe did to Wand Foo, but it was sufficient to break the determination of the Oriental to die rather than surrender the information.

"Enough!" he cried. "Stop! The remedy is simple. A few drops of a ten percent solution of sodium bicarbonate injected by hypodermic under the skin will wake the sleeper."

"Wait a minute till I write that down. That is the truth, is it?"

"Absolutely."

"Have you any in this house?"

"Yes, in that table drawer. I always have some hypodermics loaded—in case of accident."

Summers confirmed the statement, placed a hypodermic syringe on the table, and left the house. Twenty minutes later he returned, and explained his absence.

"I went to get some of that poison. You lied to me in the past and you might do it again. I am going to make you drink some of this stuff, and then, after you fall asleep, I am going to give you the antidote. If it works, you will awaken. Now, open your mouth. Oh! Yes, you will. Want some more persuasion? Here, drink this. I am going to give you a big dose, and then I am going to find something to eat and take a little sleep myself."

He enjoyed that meal, but before it was over he heard the Oriental call him.

"Ah! Mr. Summers, a little matter I forgot—in the excitement of the last hour. There is a little vial of tablets in the drawer. I am not sure of their Latin name, but

I am sure that your chemists will be able to identify it. One of them has to be dissolved in the sodium bicarbonate before it is effective. I thought that you should know that."

"I thought there was something like that," answered the detective with a grin. "Now you just go to sleep, and when you start to snore I will shoot you with the needle and wake you from bye-bye-baby land. I hope you have a happy dream."

Summers did not mean to sleep so long, but he was completely tired, and it was daylight before he awoke. There was no doubt about the sleep of the Chinaman; it was a narcosis from which no amount of yelling, shaking or pinching could arouse him. The detective fixed the antidote, injected it and then started to eat breakfast. In an hour the Chinaman was awake.

"It worked," agreed Summers. "Now you and I are going to Washington, just as fast as we can, to tell our story there."

"I cannot walk through the tunnel," said Wand Foo, decisively. "Not with my feet the way you left them."

"We are not going through the tunnel. We are going through the fence. You will walk with your hands bound and I will ride behind you with a very muddy motorcycle until we get an automobile."

"There is no gate to that fence."

"Think that I do not know that? But you know how to get out. Secret panel or something, and you are going to show it to me; either that, or I am going to hoist you up on top and stick one of those iron points through you. You are positively the hardest man to handle I ever argued with. *You do not seem to understand that I mean business.*"

Six hours later Luke Hoofer received a call from his nephew. The young man did not even have time to leave the automobile, but called the old man out to the street.

"Just how bad are things in Philadelphia, Uncle?"

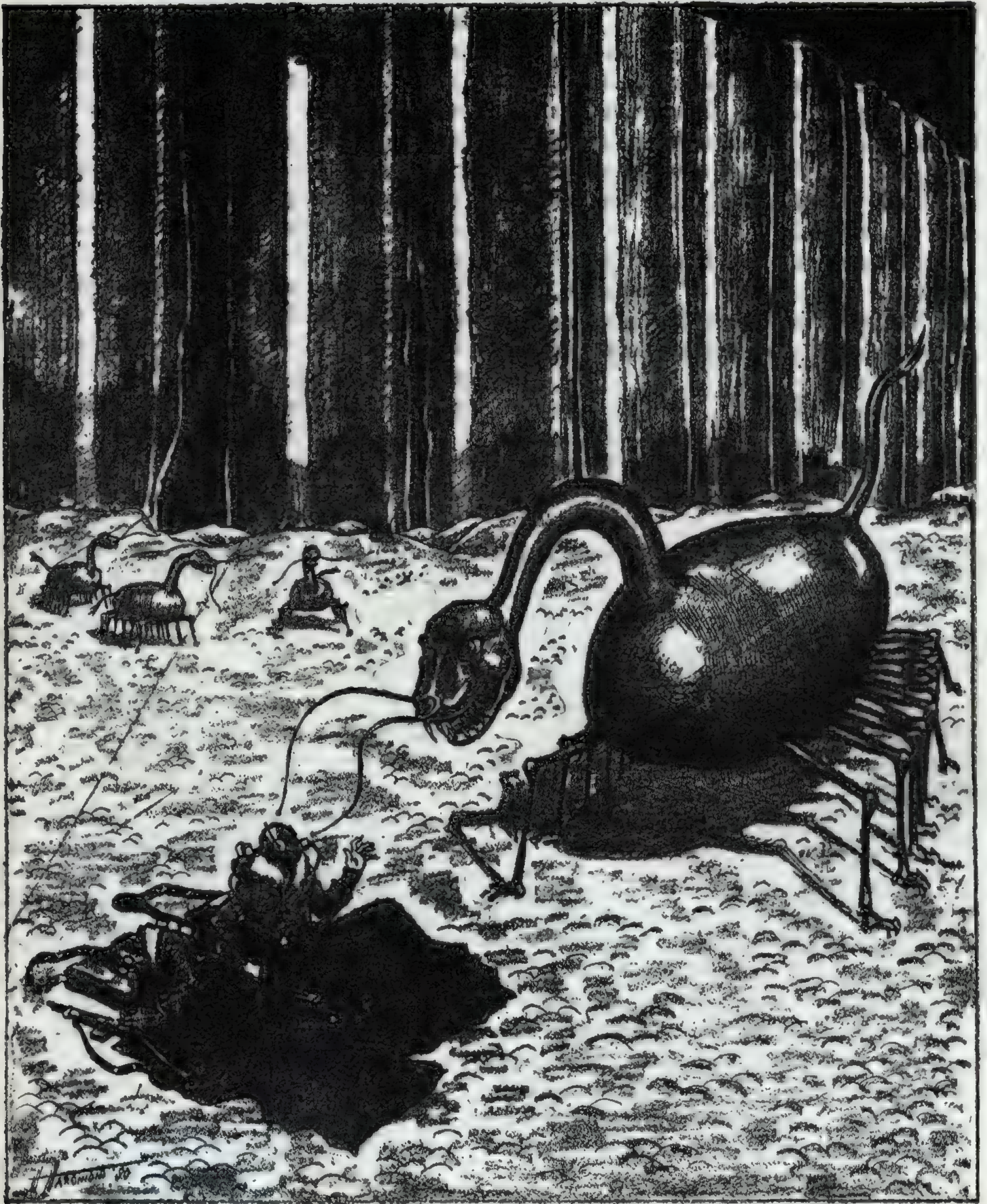
"Bad enough, Abe. Millions of people asleep, and the whole district quarantined. Where have you been?"

"To hell and back again. By the way!

(Continued on Page 1038)

The World Without

By Benson Herbert



(Illustration by Marchioni)

An incredible, nightmarish monster, ten yards long, was warily feeling his head with a set of antennae

ABOVE the subdued din around the dinner-table where in the fashionable evening clothes of the day were gathered all the white people worthy of note in Cairo, could be heard the dictatorial voice of Mr. Parling, the mathematician. Broad-shouldered, stout but not fat, with legs set wide apart like the Colossus at Rhodes, he dominated the company and delivered his speech with the gusto and rhetoric of an orator. He was a perfect type of dinner guest.

He would emphasize a point of his discourse with a blow of his fist on the table which threatened to spill the wine.

Opposite him with glowering eyes sat Dr. Klinton, philosopher and amateur archeologist. His lean hard frame, long ascetic features, and hair of the colour and texture of fine copper wires, were in utter contrast to the appearance of the speaker.

For more years than either of them would care to admit, they had waged a wordy war, mainly through the medium of the press. Few were the scientific controversies in which the one participated without the opposition of the other, and now for the first time they had encountered each other in person. The guests who were "in the know" smacked their lips in anticipation.

Their amiable host had realised too late and with a deep sense of chagrin the trouble he might cause by inviting them both to the same dinner. He trembled at the thought of the consequence of this tactless act. What nonsense was Mr. Parling saying now?—

"... and it is my firm opinion, based upon irrefutable theory, that our universe is composed of a great number of three-dimensional worlds existing side by side in a fourth dimension, just as the two-dimensional leaves of a book lie side by side in a third dimension . . ."

Mr. Parling droned on while the host wondered if his new social idea of allowing everyone present to speak upon his own special subject hobby was as good as he had first thought it. His mental peregrinations were suddenly terminated by the sound of a low, highly-cultivated, insistent voice; the inevitable had happened at last. Dr. Klinton had interrupted the thread of Mr. Parling's discourse.

"I beg to question that latter statement of yours, Mr. Parling. Such an utterly absurd idea can have no foundation when opposed by the doctrines of the

very keenest brain of the last century, I mean the eminent and profound scientist, the Frenchman Henri Poincaré!"

ACCUSTOMED as we are to our world in which the laws of nature are well-known to us, we are apt to forget that what seem to be absolute laws are really only approximations. Since cause and effect seem to follow with precise regularity, we construct from them laws of nature.

The truth is that our laws of nature are just convenient explanations of things. But it is possible that the real and ultimate laws of the universe might be very much different than we imagine. Our universe might stand in the same relation to the universe of reality, as the universes of microscopic creatures stand to us. As Alphonse Berget said, writing in *Candide* (Paris) recently, "By the side of the microphysics of the infinitely little, we have a cosmophysics of the infinitely great. And beyond? May not our universe itself, huge as it seems, be for some vaster being nothing but an aggregation of molecules, of which each is a solar system? What unimaginable physics must govern the movements of the vast solid made up of such units? But is it not fine that the brain of man is able to rise to the height of such thoughts?" The present story dealing with this theme is one of the most unusual we have read.

"Henri Poincare! He was a mathematician, yet he was also a philosopher, and like all philosophers he was a dreamer!"

A buzz of excited voices swept around the table for this was a direct attack upon Klington.

Developments after that threatened to depart from a mere discussion and become a brawl, in which the excited guests did not hesitate to join. The affair promised to be a welcome relief from the boring speeches which had hitherto marred the evening. Mine host's voice was heard occasionally above the tumult, pleading but futile, "Now, gentlemen, do be a little more quiet, please!"

Events were brought to a sudden silent standstill, broken only by faint whisperings, by the booming voice of Parling. "Stop!" he cried.

"Dr. Klington," he said in a quieter tone now that silence had been restored, "would direct experimental evidence convince you of the truth of my assertion?"

Klinton smiled sarcastically. "It certainly would."

"If you care to call at my bungalow tomorrow morning I shall be pleased to offer you such evidence."

* * *

Klinton did not fail to keep the appointment. He was let into the bungalow by Parling himself. They were both a little stiff and cold in manner as they walked to the sitting-room and Klinton haughtily took a seat.

He was instantly aware of a strange sweetish aroma which faintly pervaded the atmosphere of the room, but on looking around he could not see its source. His antagonist stood before him in the characteristic Rhodian attitude, legs wide apart, and began to speak.

"You probably know that the firm of constructional engineers for which I work is at present building a dam across the White

Nile in order to facilitate irrigation."

The philosopher nodded assent.

"While excavating for the foundations on the bank of the river, the workmen came across a sealed chamber hollowed out in a rock face, and within the chamber was discovered a sarcophagus. It was temporarily transported to my bungalow, *en route* to the British Museum. There it is, behind your chair."

KLINGTON turned his head and perceived the origin of the odor. It was a stone burial receptacle of the usual type. An inspection of the interior showed nothing more startling than mummified remains and a scroll of some material, probably papyrus, with an inscription on the outer surface.

"I understand you know something about archeology," said Parling. "Can you tell me what these hieroglyphics mean?"

"Certainly. Hum. This is rather strange. It means—*Before Isis existed, this was*. Very peculiar. But what has this got to do with the question?"

"You will soon see."

Parling took the scroll, unrolled it and revealed

within a flexible bar of some bright purplish material, about three feet long and two inches wide. One end of the bar was fitted into a small transparent globe containing a yellow liquid. The bar could apparently slide right through the globe, a groove having been made for it.

Parling had assumed a confident overbearing manner and the light of triumph was in his eye. He pushed the rod till the end projected about four inches beyond the other side of the globe.

"I found it entirely by accident," he said.

"Found what?" said Klinton, manifestly puzzled and a little contemptuous.

"The secret, of course," said the other.



BENSON HERBERT

"Now watch the end of the bar carefully."

With these words he continued slowly to push the rod through the bowl. And then it was that Klington began to think he was being hypnotised. He could no longer see the end of the rod. Up to four inches from the bowl there was firm solid matter, but beyond that, nothing!

Parling chuckled at his astonishment.

"You're wondering where the end of it has gone, eh? Well, you see it's perfectly flexible? Just where it ends off it has undergone a double right-angle bend. And through some unique property conferred upon it, no doubt, by the presence of the liquid in the globe, one of those bends is in the fourth dimension. The other bend naturally brings it into some other world parallel to our own. It certainly is not in our world,"—and he passed his hand through the space where the missing end of the bar would normally have been. "I defy you to explain the phenomenon in any other way."

Klington was decidedly sceptical.

"How do I know you are not tricking me?" he said.

Parling scowled and thrust a finger before the other's eyes. It was stiff, lifeless and almost brittle.

"See this finger? I had placed my hand on the rod and moved it along towards the vanished end in order to attempt to follow the bend into another world. I succeeded!—to my cost. The chances against the other end of the rod being on the surface of a planet were billions to one, so it is not surprising that my hand emerged into the frightful cold of the outer space of some other world. I quickly withdrew it, but the result is as you see."

Klington's lean face showed a curious mixture of expressions as doubt struggled with conviction. Parling was speaking again while he clamped the rod and globe to a mechanism on the table.

"With the aid of this vernier arrangement I can project the bar along the fourth dimension any desired distance correct to a ten-thousandth part of a centimeter. I rigged it up this morning in preparation of your coming. In order thoroughly to convince you, I propose we make a journey into one

of the many universes parallel to our own. Is your philosophic courage equal to such a trip?"

There was only one answer which a man like Klington could give to such a challenge.

"But how can you be sure that the world we enter will be hospitable? It is not just necessary to land on the surface of a planet; it will have to be moving at about the same rate as ours and in the same direction, or else it will be impossible to transfer from one to the other. Also, of course, the correct atmospheric and temperature conditions will have to be found."

"That's easily arranged. Nothing simpler. We'll first of all fix the end of the bar at a certain distance and slide a thermometer along it, and other instruments of course such as a barometer, a container to get a sample of the air to be analysed, and a camera to see how far from the surface of the planet we are. That universe not being suitable, we'll simply alter the distance by means of the vernier and try another. Shall we start now?"

And so they began the hunt for a suitable cosmos. Klington very soon lost the last traces of doubt, and the two men forgot all their former antagonism in the common interest of the search. They became, in fact, as enthusiastically excited as a couple of schoolboys.

The method adopted for projecting the thermometer along the fourth dimension was at once ingenious and simple. A loop of cord was passed round the rod and attached to the instrument; with the help of a close-fitting flexible sleeve around the bar the thermometer could easily be pushed along it without the hands of the operator coming in contact with the other world. Since the thermometer was bound to the bar, it was forced to follow the bend into the fourth dimension. Other objects were treated similarly.

In all the first few attempts, the mercury in the thermometer was frozen solid. After a week's work they found a small piece at the end of the bar was melted clean off. Apparently the last attempt had projected it into the interior of a sun.

By this time the sarcophagus had been removed, but Parling secretly retained the purple rod and globe in order to continue the experiments.

At last they discovered a world whose temperature was quite tolerable, only eight degrees Centigrade. Disappointment awaited them on analysing a sample of the atmosphere, however. An uncomfortably large percentage of chlorine was present. But this did not deter them. Klington suggested obtaining gas masks with small tanks for liquid oxygen. On taking a photo with a clockwork-shuttered camera weighted so as to swing the lens towards the centre of gravity of the new world, a firm greyish ground was perceived about forty feet away, with long slender black stems growing ten feet high and five yards apart. The clearness of the print indicated that the ground was almost at rest relative to our earth.

Having obtained a rope ladder, they came to their final difficulty. The flexible bar could not possibly bear their weight. This was overcome in the following manner:

All the ladder except about a foot of one end was projected into the outer world. The visible end of the ladder was then fastened to a stout stanchion in the wall, and disengaged entirely from the bar.

The vertical in the other world was inclined at an angle of thirty degrees to that of the earth. To transfer themselves from one world to another, all our dimension-travellers had to do was to grasp the visible rope of the ladder, feel along it with their hands till they came to the next invisible rung, grasp it, and pull.

A fortnight after their first meeting all was ready for the journey of exploration they intended. They donned their masks with eager haste, strapped on haversacks containing a fortnight's supply of food and also oxygen tanks, and attached leaden weights to their feet in order to counteract the effect of the small amount of gravitation in the new world.

Parling stood by the ladder. "Are you ready?" he enquired of Klington who nodded, too excited for words. Parling fumbled about for a moment with invisible hands

for the invisible rung, gave a tug, and vanished silently.

After an instant of hesitation, Klington followed.

CHAPTER II

The New World

THE first sensations Klington experienced were the change of direction of the pull of his weight through an angle of thirty degrees, and an immediate drop in temperature. As he clambered down the ladder swaying with the motions of Parling below him, he became aware how necessary was the thick coat he had brought with him. Rung by rung he advanced towards a land never trodden before by earthly feet. The chlorine gas present in the atmosphere, though not sufficiently dense to prevent distant vision, gave to everything an unearthly green tinge. Shortly the tops of the forest of black stems became apparent, and he observed that the tip of each stem branched off into several short and pointed spikes.

A few more rungs, and with a thrill of anticipation Klington stepped from the ladder to the ground. Vision was remarkably clear except for the upper heavens which were blotted out completely with clouds of green.

The widely separated black growths offered almost no obstruction to the view. The ground was pitted with innumerable straight deep ruts, varying in width from eight to ten feet, and leading in every direction. Where two ruts ran together, there occurred a circular pit whose depth could not be estimated owing to the jet blackness of the interior.

Some indefinable quality of strangeness about the landscape seemed just to be eluding his attention. Something was puzzling him, and he could not locate it, something that was entirely differentiated from anything he had previously experienced. His confused mind groped as if in blindness; he turned to express his bewilderment to Parling, and found him closely examining the nearest black bole.

Its texture was smooth and glossy, its

width a mere inch, surprisingly thin for such a length, and every few seconds it quivered gently. Were they plant growths? If so, they had no terrestrial counterpart.

Parling cautiously put out his hand and felt the velvety surface. With a cry of fright he recoiled suddenly, but too late. The thing gave a sudden tremor and lashed about with irresistible violence. Parling was instantly flung off his feet and precipitated over the edge of a circular fissure behind him!

Klington rushed to the hole and peered over the edge. Nothing was visible but he heard a curious slithering sound,—and a despairing voice.

"Quick, Klinton, for God's sake help! I'm on a kind of slippery ledge and I can't hold on much longer!"

Now the ladder was a hundred feet long in case by chance this new world they had entered moved away relatively to the earth. With great presence of mind, Klinton flung the loose end into the pit, and held it firm while Parling clambered up, none the worse for his scare.

"Phew! What kind of a plant is that? Was that a reflex action?" said Parling. "That darkness has reminded me. Wait here a minute."

Parling climbed up the ladder and vanished into the world of their birth, shortly reappearing with two electric torches remarking that they might require them. Despite all of Klinton's philosophy, he could not forbear a twinge of uneasiness as he waited along in this world of unknown perils. Suppose Parling, prompted by their former antagonism, pulled the ladder back into the bungalow, leaving Klinton stranded? But Parling's immediate return put his thought to shame.

All was now in readiness to start a tour of exploration. Before they left, Parling attached a large white sheet to the top portion of the ladder, to serve as a guide on their return journey. Then from a point half way up the ladder the surrounding land was surveyed to determine the direction they should take.

"Notice anything peculiar about the horizon?" asked Parling.

That was it, the horizon! It was that which had been puzzling him! *There was no horizon!* The desolate plain on which they were situated moved upwards in front and behind and on the right in a great concave sweep,—and never ended. It continued on and on, mounting higher, until hundreds of miles away it was lost to view in the green mists of the sky. Only on the extreme left was there a short semblance of a horizon, where a definite edge could be seen. This was assuredly no ordinary planet which they were visiting. There was no sun in the heavens, but a brilliant glow on the left, which lit up everything clearly, seemed to proclaim the presence of some solar body below the brief horizon.

PARLING discerned a mighty chain of mountains on the right almost having the appearance of hanging over their heads, about fifty miles away as near as could be judged, and it was towards these that they finally decided to make their way.

With their rifles and a plentiful supply of ammunition, they set off. Walking was by no means difficult; the fissures were easily cleared at a step owing to the fact that the leaden weights were insufficient completely to supply the gravitational deficit, and it was simple to avoid the widely spaced stems. They covered about twelve miles without a single mishap or an encounter with any inhabitant of this desolate region, and then called a halt for a meal.

Perhaps it should be explained that the masks Parling and Klinton were wearing were quite different from the type used in the Great War. They permitted free movement of the mouth and were adjusted in a moment.

After a short meal the march was resumed, and within an hour they emerged from the forest of black boles and found themselves on a gently sloping plain, entirely free of fissures and of a much harder, though not rocky, character, which led directly towards the foot of the mountains.

These latter far surpassed any earthly heights, and formed a tremendously awe-inspiring spectacle. Composed of a dazzling smooth white material, they rose sheer

in an absolutely vertical line from the plain to a height of at least twelve miles.

Imagine the confoundment of our little terrestrials at this breath-taking revelation. Consternation, dismay, terror, admiration, seized them in turn as they gazed upon the glorious albus magnificence of those sharp peaks crowned in green mists. In perfect order they stood, in a straight line, all of similar shape, like a line of guards shielding the mysteries of the land beyond. Broad at the top as at the bottom, many overlapped or were in actual contact in parts, and at most only a narrow crevice separated them. Each peak was of a uniform width of four or five miles, and seemed exceedingly thin (as measured in the direction in which the travellers were going) for their height.

Parling and Klington pushed on rapidly across the plain with burning curiosity to discover the secret of those celestial crags. What manner of world was this in which Nature was so lavish, and so—*regular*?

Such was the slightness of gravity that by the time (as indicated by Klington's watch) Cairo was in darkness, they were but a mile from the nearest peak. Speechless with astonishment at the close view of the monstrous mass and weary with exhaustion, they struck camp on the plain and composed themselves to sleep. All this time the brilliancy of the illumination had neither diminished nor increased.

Parling was suddenly awakened by a hissing whisper from Klington.

"Parling! Sh! Lie quite still and tell me what you hear!"

A moment of silence.

"Not the slightest sound!"

"Put your ear on the ground, then."

"Yes! Yes! A faint thudding sound."

There could be no doubt about it. Every thirty seconds a distinct booming noise was heard, and—was it imagination?—the ground appeared to rise and fall gently at each noise? Did this portend the approach of some unknown danger?

Attacked!

BARELY had they fallen asleep again when Parling was aroused by a peculiar sensation on his brow. He opened his eyes and started up in horror, unable to utter warning to Klington, his vocal cords momentarily paralysed. An incredible nightmarish monster, ten yards long and with ten spidery legs on each side, its head set on a long thin arching neck, was warily feeling his head with a set of antennae emanating from the place where its nose ought to have been!

Parling stumbled over Klington, instantly awakening him, obtained his rifle and fired haphazardly. The Stygian beast immediately turned and galloped with tremendous velocity towards a crevice between two mountains, and vanished. The two men gaped for a full minute before recovering their wits. Then Klington spoke, shakily.

"Well that's the first sample of Other-world animal life we've had, and if the rest are like that, we shan't have to protract our visit too long!"

After that, one watched while the other slept. The lack of fuel was much regretted for the cold seemed more intense when lying still.

At six A. M. Cairo time they prepared to set off once more. Parling stood up and faced Klington.

"We have a choice before us," he said. "We can either return at once to the ladder or continue to the other side of the barrier through the crevice, where we will meet heaven knows what perils. For myself, I am extremely curious to discover what lies behind that white wall, but seeing that the object of our expedition is accomplished, namely that you are thoroughly convinced of the truth of my theory, I am quite willing to retrace our steps if you do not care to proceed."

Klington's answer was brief and to the point.

"I move that we push on at once," he said calmly.

That settled the question. In a few minutes they were at the foot of the nearest mountain and examining with great wonder

the smooth polished surface thereon. The wildest imaginings filled the brains as they surveyed the colossal structure.

"Surely this must be artificial," said Parling in an awed tone, as Klington tested its hardness by kicking it.

"An artificial barrier ten miles high is quite incredible," retorted Klington.

"Nevertheless we have seen many incredible things in the last few hours. It is my opinion that on the other side we shall find the builders of this wall. Think what a tremendous degree of civilisation they must possess for their engineers to construct such a huge barrier!"

Before he could theorize further the two were fighting for their lives. A horde of creatures similar to the one previously seen, were rushing down upon them from the mountain pass. Useless to flee—they were galloping along at over two hundred miles an hour. The terror of despair gripped the hearts of the Terrestrials as they fired into the midst of the advancing mass. As if by magic, the leviathans instantly dispersed to all sides and sought shelter. It was apparently the sound of the explosions that they could not withstand.

Frequently in their journey through the pass the travellers were attacked by these horrible denizens of the mountains, but noise never failed to frighten them off.

The way through the pass was rough and difficult. Often Parling and Klington could barely scrape through between the two crag-sides. The path moreover was steep and rose to an elevation of several hundred feet about half-way and descended as steeply on the other side. If it were not for the advantage of lesser gravity they could never have performed the feat. As it was, over five hours were required to pierce to the other side. The latter portion of the journey was beset with dangers owing to the increasing slipperiness and unevenness of the road.

Then at last their arduous trouble was rewarded. They safely maneuvered a tortuous gully, wedged themselves through a narrow cleft, and came in sight of the concealed domain behind the barrier.

CHAPTER III

Where Red Ruled

THE most striking thing about this new territory was the fact that every object in it, except the cliffs behind, was red. A great red plain stretched before the daring Terrestrials, traversed by numerous folds, and covered with a low, red, bushy vegetation in which swarmed a myriad forms of almost microscopic life not unlike mundane insects—but all red. Each step they took a squelching noise and a red viscous ooze emerged in slow trickles from beneath the vegetation. Several miles away from the cliffs the land appeared to be in deep darkness.

Of Parling's anticipated mighty civilisation and great engineers, there was to his keen disappointment, not a single sign. He still hoped, however, that they might live underground, or else how to explain the regular beating sound they had heard on the grey plain, apparently emerging from the bowels of the earth?

While Parling was cogitating thus, Klington suddenly became alarmed and, seizing his pair of binoculars, he stared intently through them vertically upwards at the green sky.

"Parling, look straight up," he said tensely, "there's a vast white thing falling through the green clouds!"

Parling, extremely startled, looked up also. Were his senses playing him tricks? Had his mind given way under the strain of the recently uncanny happenings? If so, how did it come about that Klington's illusion was the same as his? The appearance took the form of a line of huge white cliffs hanging upside-down in the sky at least fifty miles away, and falling straight towards those other cliffs below, which they so greatly resembled. He was also conscious that the illumination which up to now had remained steady, was gradually fading. What could this new development mean? Were they to be plunged into darkness and crushed helplessly beneath countless tons of rock? And where was the rock falling from? A sudden fantastic thought enter-

ed his tortured mind, almost too bizarre for utterance.

"Klington," gasped Parling, seizing him fiercely by the arm and slowly pointing upward with the gestures of a fanatic, *"Klington, it is as if—as if a colossal mirror were falling above our heads, and what we are seeing is the reflection of the white ranges we have just passed through!"*

Indeed, Klinton readily imagined that one was the reflection of the other, so alike were they in every visible detail. All at once he sprang to life. "Come," he said, and spun Parling round, "we have no time to lose. If the apparition is really a rock falling from an immense height, it will take over an hour to reach the ground. We required five hours to pierce the pass; to return is therefore foolhardy. Only one way lies open to us, and that is directly across this red plain away from the mountains. It is our only hope of life. We must flee as far as possible from here before the catastrophe occurs! Come!"

And the two dispensed with some of their leaden weights and began to run across the red ooze in mighty leaps of fifty yards each. The seeming utter impossibility of what they had witnessed had staggered their minds; all logical connected thinking ceased; a dull apathy settled upon them, and only the motor centre of their brains kept their leg muscles in feverish activity. Onward they progressed in Herculean strides; they did not even dare stop for meals, but ate as they ran.

No word, but only unpleasant squelching sounds, broke the silence; they reserved all their breath for running. Ever the light continue to fade, ever they approached the dark shadows of the farther side of the plain. But what was the use of their flight? Such a mass crashing down from the skies would shake the whole planet to its very foundation. Anything was better than inactivity; to stand still and watch an awful doom approaching would have been inviting madness. Often Klinton and Parling wondered if they were not already insane, and undergoing illusions rivalling those of an opium dream.

SUDDENLY they were both flung on their faces by a terrible continuous cracking noise interspersed with frightful peals of thunder, as if Thor were splitting the earth in twain with his hammer. They were unable to do anything but cling hard to the vegetation and stare at the monstrosity in the heavens while the medley of sounds accompanied by a terrific blast of hot air swept over them. Had the falling rock at last reached the ground? But no! They goggled in their amazement. The line of rocks, now only half a mile from the topmost peaks, were no longer accelerating but were actually slowing down! Their speed now was reduced to not more than a few feet a second.

Whence then came the awful sound and the wind? The last vestige of reality left the scene as the lone human beings stared about with frightened eyes and failed to perceive the origin of the dread tumult. There was a vague mass faintly in sight far away to the left, and shadowy outlines above in the skies indicated something huge like a canopy as if supporting the suspended rocks. The light, now reduced to a mere dim twilight, gave them no cheer. They had been saved for the nonce by a miracle so incredible that their benumbed wits had not as yet even realised the situation.

Then as suddenly as it had begun, the deafening din ceased, but the warm blast continued blowing, without noise, and left the world once more a wilderness of silence. The men staggered to their feet and found that they were just within the region of dense shadow they had perceived before. Seeing that all immediate danger was apparently over, they decided to recuperate their fatigued bodies with sleep and food.

Parling was the first to awake. While his fellow-voyager slept on, he occupied himself in throwing away an empty oxygen tank and replacing it with a full one.

An Unexpected Peril

KLINGTON was aroused from his deep sleep by a light touch on his shoulder. He opened his eyes, stared upwards at Parling, and grunted interrogatively. Parling

had unconsciously assumed the old familiar attitude, legs stiffly apart like a statue; his arm outstretched pointed over Klinton in the direction of the white mountain-chain. "Look," he whispered. The other slowly got up and turned around. The two simply stood and watched, absolutely incapable of further wonderment, while the new danger rapidly advanced.

A wall of some liquid, apparently water, at least a mile high and so long that it stretched out of sight on either hand, was bearing down upon them with the velocity of a tidal wave. With one accord they turned and fled into the darkness.

They soon found themselves going steeply downhill, and it became so black that it was necessary to use the torches. The latter saved them from countless mishaps as they sped through the gloom in gigantic leaps. Their velocity was now almost equal to that of the oncoming wave, but how long would it be before they tired and their doom overtook them? They were now practically falling down the precipitous grade, and making good progress, but while the slope no doubt aided them, it also speeded the water behind them. The swishing and roaring of its passage had just become audible when the ground suddenly smoothed out to a gentler slope.

Gasping for breath, they raced on side by side, and ever as one stumbled, the other tarried to help him up. After many weary miles were covered in this manner, their overworked muscles were forced to slow down. Not so the waters, however, which inexorably swept on. The latter could no longer be seen, owing to the dense blackness, but their nearness was easily judged by the increasing noise they made. Dully Klinton and Parling realised that their adventure was at an end and their story would never reach the world.

But wait! Klinton had an inspiration. "Parling," he sobbed almost incoherently, "turn the oxygen regulator throttle full on!"

No sooner had they done so when renewed life flowed through their veins. They felt rejuvenated, intoxicated. Once more they struggled onward, with the roar of the wa-

ters always present in their ears, like monstrous grasshoppers advancing inexorably.

The respite was brief, however; for a time it worked well, but the extra flow of the life-giving fluid used up their energy at an enormously increased rate, with the result that after a short interval of superhuman activity, they fell inert to the ground utterly exhausted. Nothing now could possibly save them, it appeared. As they lay groaning in the oozing vegetation, waiting hopelessly for the end, they became once more conscious of that regular booming sound emerging from the bowels of the earth, which they had remarked before, but now at a greatly increased volume.

And now the mighty swirl of waters was upon them, and all wild speculations as to help from the originators of the mysterious beating were engulfed in the lashing fury of the wave. Up, up, it swept them right to the top of its lofty crest. Klinton, feebly trying to float on the smoother upper surface, felt himself borne along irresistibly, *whither?* His torch was still firmly grasped in his hand, as the drowning man is supposed to clutch the straw, and the ray inadvertently fell upon Parling, a few feet away.

Klinton could barely credit his senses. Surely the weird effect of the solitary gleam playing about in a sea of darkness, combined with the fatigue of his faculties, was deluding him. With an effort he swung the torch round until it again illuminated the figure of Parling. No, it was impossible, impossible! He was reminded of the days of his far-off childhood, when the old Bible tales of long ago were related to him.

For an amazing miracle was being enacted before his very eyes! Parling, who appeared quite as startled as himself, was actually—*walking the waters*. Klinton's blood ran cold as he turned his attention to himself and realised that so far he had *never yet been submerged*. In fact he was merely lying on the surface as naturally as one lying on a couch. He stood up and began to walk towards Parling.

Imagine, if you may, the amazement of that incredible meeting! These two, who had never expected to see each other again

in the flesh, had once more been saved in a miraculous fashion!

THEY walked to each other, shook hands, and grinned in delighted astonishment! Then it was noticed that the water gave way a little under their feet, but that the surface was not even broken. It was as if a tight impenetrable skin was stretched over the entire seething liquid.

It was comparatively quiet up here, so far above the noisy tumult where the water came in contact with the ground, and conversation was unrestricted. The inklings of a great idea had come to Parling when first the wave swept him up in its embrace, and now he became wildly excited, whooped with joy, and slapped Klinton on the shoulder so that he fell flat, for it was a difficult task to keep one's feet on the smooth skin-surface. "*I have it!*" *I have it!*" he cried, in tones suggestive of a man who has suddenly solved an almost insoluble problem.

"Have what?" enquired Klinton, rather annoyed at his companion's unaccountable exuberance.

Parling calmed down somewhat, then said grandiloquently, "With all your philosophy, you have no doubt been unable to see the explanation of all the mysterious occurrences which we have recently undergone?"

Klinton assented bewilderedly.

"Ah, Klinton, it must be due to bad training in your youth! Your philosopher-masters have told you that everything is relative, and you believed them, but such is your mind that you are unable to apply it in even simple cases! Klinton, it requires the mind of a mathematician to do that! My explanation, at once elementary and logical, embraces everything from the black forest to the flood which now carries us along! And if it is true, then it also indicates another danger ahead, far more terrible than the ones we have yet experienced—", and Parling stopped for a moment and peered into the gloom ahead.

Before he could say another word, before the astonished Klinton could utter a single question, the surface of the water tilted and assumed an angle so steep that it was no

longer possible to remain upright. Klinton and Parling instantly were upset upon their backs and began glissading down to a fate that was, at least to Klinton, unknown.

They had no time to remark upon this frightful *contretemps*; it was as much as they could do to keep their feet foremost. But extinction was not yet to be theirs. The waters swept round a gradual curve to the left, ever steepening, but the Terrestrials, since they were not actually immersed in the fluid, did not partake of its friction and hence careened on in a straight line, owing to their own inertia, in the direction of the tangent. They were crushed with staggering force against a rocky rough mass—the first elevated land they had encountered since leaving the albus mountains—jutting up out of the water to a considerable height.

With the energy born of despair they clung with all their weight to the slightest projections the island afforded, and Klinton with great difficulty managed to haul himself upon a narrow ledge, in the process dropping his lamp, which was instantly swept away in the current.

Parling's torch, however, indicated the precarious position of his companion, who had obtained a grip on the ledge but could not pull himself up. Klinton carefully made his way along the ledge, bent over and removed the torch from Parling's grasp, placed it in a cranny so that it shone upon Parling, and heaved him out.

A few feet further on the ledge abruptly terminated, so they were obliged to walk along it in the other direction. Not far, however, had they progressed when they were forced to stop. An impassable wall blocked the way, and they stood, helplessly flashing the torch around. Yet there was still a hope. The beam revealed no passage round the obstruction, but about twelve feet above their heads the ledge seemed to continue.

Klinton, the lighter of the two, climbed upon Parling's shoulders and thus enabled him to reach the upper ledge. It was then an easy matter to help Parling up the rock-face. The new ledge sloped steeply upwards, and the slipperiness and narrowness

of the path made it extremely difficult to walk. For an eternity they plodded onwards in silence, broken only by a disconcerting gurgling sound that became louder and louder as they mounted.

The path took a sharp turn to the left, following the contour of the island, and the travellers, weary and hungry, found themselves on a wide platform surrounded by rock on three sides and having blank space on the other. Klinton and Parling shuddered with horror as a flash of the light revealed a ghastly pit of unestimable depth into which the waters plunged in the form of a vast whirlpool, originating the gurgling noise. But for the timely intervention of this island, they would now be lost in its depths.

"As I thought! Just as I thought!" said Parling, gazing into the abyss.

CHAPTER IV

An Explanation and a Tragedy

WHEN the Terrestrials had made themselves as comfortable as possible on the rock-bound square and partaken of food, they slept for some six hours. Parling refused to say a word until he had rested. As for Klinton, his mind was in a whirl at the anticipated explanation. Had Parling really the solution to all the peculiar phenomena which they had seen?—the lack of horizon, the sensitive black boles, the interlacing regular furrows, the unchanging illumination, the abrupt and orderly white mountains, the hideous denizens of the pass, the strange underground beating with its accompanying 'quake, the plain where everything was red, the falling rocks which never reached the ground, and lastly this turbulent sea sprung from nowhere?—or were the hints he had thrown out merely the gibberings of a maniac?

In the morning, or rather, when he awoke, he was agreeably surprised to find that the lamp was now unnecessary. The light, though faint, was good enough to enable him to perceive nearby objects. He aroused Parling, and after they had eaten

he immediately enquired of that which he was intensely curious to know.

"It is really very simple," said Parling, "in fact, almost obvious, at least to a discerning intellect like mine!"

Klinton was much too interested to parry, and Parling went on.

"The key to the mystery lies in this—we are not on a planet at all!"

An exclamation escaped from Klinton. Parling rose up and stood on the edge, his back to the gulf, in his favorite attitude of emulation of the Rhodian Colossus. He was the triumphant man now.

"No," he said dramatically, "*we are not upon a planet—but on the skin of a monstrous, Gargantuan animal!* Is it not obvious? We landed on the lip of the beast, where sensitive stems no doubt were analogous to *down* in our world, and travelled down to one side of the lip. There was no horizon almost on every side because we were on the slope nearest the mouth, and the ground curved upwards all around until it was out of sight. You can understand that, at least.

"The mountains we encountered, Klinton, were indubitably teeth! And I suppose the large swift-footed organisms we met there can be likened to the bacteria in our own teeth which cause decay if not removed by toothpaste. Well, we journeyed between two of the teeth of the monster, and thus entered its mouth. Time and space seem both to be greater in this universe than in ours, for the heart-beats we heard were quite slow.

"The similarity between the creature and humanity is so great that the interior of its mouth is red, as we saw. The sea that swept us here is, of course, merely *saliva*, and the cracking sound we heard during the gale must have been some tit-bit the monster was crunching at the other end of its mouth! We shall soon see it."

"But how do you explain the miracle of walking on the waters?" interposed Klinton excitedly.

"I don't quite understand that," said Parling slowly, as if unwilling to divulge any flaw in his theory.

They fell silent for a moment. Klinton

was reflecting deeply. Suddenly his face lit up. "I've got it!" he cried.

"Why, it's quite obvious, and is a strong corroboration of your idea."

It was now Parling's turn to be confused. "Indeed," he said.

"Yes," said Klington, "it was due to *surface tension*! Have you ever seen a microphotograph of a fly crawling on the surface of a stream? The surface tension, common to all fluids, gives the appearance of a tight elastic skin stretched over the water,—just the effect we observed. Compared to this Brobdingnagian animal, we were much less than any insect. The phenomenon is not due, of course, to the large volume of liquid present—or else no boat on an ocean could ever sink on our earth—but to the fact that the molecules themselves composing the saliva are correspondingly bigger than earthly molecules."

PARLING was pleased at this support of his theory.

"The philosopher's mind," he said, "can lead on to fresh facts, once the mathematician has shown the way.

"The apparently 'falling rocks' which caused us to depart in such a hurry, as I suppose you have guessed by now, were none other than the upper set of teeth of the monster."

Parling turned around and pointed to the tremendous hole below him.

"And this, Klington, is undoubtedly the creature's throat! Think of it, man, think of it! *It must be at least five hundred miles deep!*"

Then swift and sure, on the heels of this statement, came death. The island which had stood them in such good stead, gave a sudden spasmodic twitch as if revolting at the thought of these presumptuous and daring mortals from another world. With a terrible despairing cry, Parling, who had been standing on the very edge, toppled over, hands madly clutching at empty space, and vanished into the boiling maelstrom!

Klington was flung against the hard sidewall and knocked unconscious by the shock. When his senses revived, the light was as bright as day. No doubt the monster was

again opening its mouth. For several minutes he lay dully, while slow realisation came to him of the loss of his companion and of the fact that he was now absolutely alone in a strange world, aye, imprisoned in the jaws of a nightmare animal!

How long he remained there he had no means of telling, for his watch had stopped at the impact. Many times the island was shaken by spasms, but none so violent as the first. He kept as near to the inner wall as possible, in fear of sharing the fate of the unfortunate Parling. Then came the dread moment when he fitted the last oxygen cylinder to the breathing tube, and still the waters had not subsided. He remembered Parling's haversack, which lay where Parling had had his last sleep. To his joy it contained a plentiful supply of the essential cylinders. At that instant the roaring of the waters ceased, and he went to the brink and looked over. The whirlpool was now reduced to a mere trickle. It was necessary to go at once before a second deluge appeared.

Klington fastened his haversack, replenishing his diminished supplies with those of Parling, and, climbing down the narrow ledge, jumped up to the floor of the mouth. He had gone but half a mile up the slope towards the white barrier far away in the distance when a fresh surprise greeted him. The ground curved upwards much steeper than he had observed it before to a height of several miles, and ran flat for a time until it encountered the tops of the white mountains!

He could not imagine what had occurred for a considerable period, then it came to him in a flash. *The monster had merely raised its tongue, the tip of which was now resting on its teeth!*

It was no good climbing to the top of the teeth, so he made a detour to the left, in which direction he thought lay the nearest edge of the tongue.

After a journey of many miles, he came at last to the edge, clambered down the rough side, and stood upon the mouth-floor proper. He continued along the five-mile wide channel between the cheek and the tongue until he came to the teeth. The

short journey over, in the pass between two of them, where he encountered the usual microbe-like creatures, he stood on the clear plain which alone separated him from the vicinity of the one link with the earth.

Klington raised a powerful pair of prismatic binoculars to his eyes, and scanned the forest of black stems for the white sheet which indicated the position of the ladder. Imagine his horror and dismay when it was *nowhere to be seen!*—For half an hour he searched, while a cold tightening grip at his heart made itself more and more felt.

Then to his great surprise his attention was attracted upwards. With an unpleasant jolt he perceived that some chance movement of the beast which bore him had caused the ladder to ascend to a height of four or five miles. It was also much nearer than before; he could even make out the end of the rod beside the rope ladder and the sheet. What a terrible predicament he was in! Hope seemed lost as he gazed with hungry eyes at the precious connection to his world.

Desperate Moments

IT was moving so quickly that he could just perceive its motion. It was almost half way between its former site and the nearest tooth. A faint hope surged in his breast. It was his only chance for life, for soon the last of the oxygen would be utilized. If the motion continued in that direction, the ladder would shortly be close to the peak of the tooth. Instantly, for no time was to be lost, he flung away much of his provisions, and all the leaden weights, retaining however the remaining cylinders, and returned through the gap in huge hops.

Without a pause he trekked alongside the tongue until it was near enough to the ground to make the ascent practicable. Without daring to delay for meals on he climbed up the steep difficult slope of the lower portion of the tongue, until he arrived at the flatter upper portion. Here going was much facilitated, but he did not relax his efforts, and by exercising his will-power to the utmost, he forced his tired limbs toward the tip of the tongue.

While down in the pass below, he had

noted the tooth towards which the ladder was moving, and counted how many teeth lay between it and the end of the row. With this to guide him, he hurried on, hunger now added to the fatigue.

Within five hundred yards of the tip, he paused and flung himself prostrate with a cry of despair. The tongue had been slowly contracting and arching upwards and now the tip was a good eight hundred yards from the opposite peak! As if in mockery, there dangled the ladder above the tooth, just within reach of a vertical jump! By the time the ladder passed over the tongue, it would be too high!

Klington stood up with sudden firm resolve. There was but one thing to do. Casting away his haversack he ran to the very tip and flung himself bodily through the air in a mighty attempt to span the gap.

The feat was by no means impossible, but there was a large element of risk for a man in Klinton's weakened state, despite the slight gravity. Up, up he rose to the top of the parabola and then began to fall with a slow acceleration. His mind reeled at the thought of the terrible gulf of twelve miles which lay below him, but he determined not to look downward.

Presently his heart froze with horror as he realized that he could never attain the opposite side. His weary limbs had failed him at the last! He would fall short by about three yards! A small distance, true, but as good as infinity in his present condition.

He had but two or three seconds in which to consider the position before he passed below the level of the opposing brink. His subconscious mind, or "subliminal ego", unknown to himself, was working with lightning rapidity.

Suddenly there flashed into his conscious mind two facts which he had learned when a schoolboy. Projectiles have the maximum range when they leave the mouth of the gun at an angle of forty-five degrees to the horizontal," was the first, and the second was the principal of the Goddard rocket—reaction.

The heaviest object he had which could

(Concluded on Page 1040)



The Outpost on the Moon

By Joslyn Maxwell

(Concluding Installment)

What Has Gone Before

George Marland meets an old college instructor, Barton Wiley, and on resuming their friendship Marland discovers that Wiley has found the secret for nullifying gravity. They build an experimental ship and with the success of the material they obtain support for the building of a space ship. They travel to the moon and discover on this dead world some queer phenomena which point to the presence of an illuminated lunar satellite. Travelling over the moon to investigate it they run across a cone shaped ship which flashes a ray against them and stuns them. They awaken to find themselves in the hands of a colony of human beings who are living on the moon. The colony is presided over by a Dr. Forscher who is a super-scientist. The two explorers are given to understand that they are guests of the colony—whose purpose they cannot discover—until they meet and talk with Forscher. The colony lives beneath the moon's surface but, by the genius of Forscher, they have all the advantages of food, sunlight, etc., as they could have on the earth's surface. With their guide, a Doctor Langley, the two explorers are invited to travel on one of the cone ships, called tractors, on a tour of inspection of one of the airplants whose machinery has broken down. The

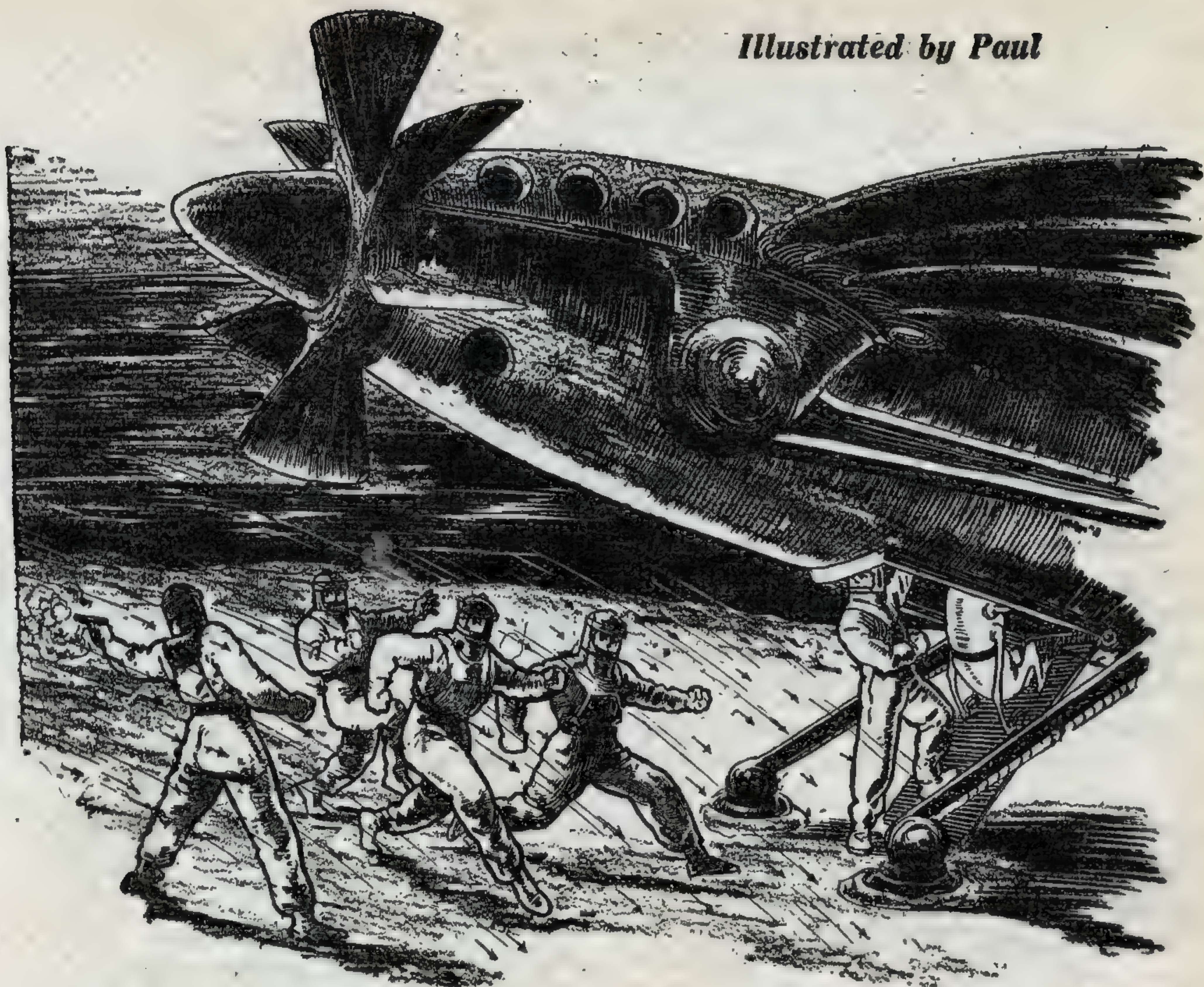
tractors, they learn, are propelled by synthium, another of the products of Dr. Forscher's genius.

Meeting Forscher the two explorers learn that he has established the outpost in order to investigate a queer bombardment of sulphur particles that occurred on earth many years ago. From investigations he had deduced that the bombardment originated in the neighborhood of Ganymede, satellite of Jupiter, and he believed that it was either a threat to the earth or the effort of sentient beings there to communicate with us.

Marland returns to earth to enlist, for the outpost, the aid of a noted astronomer to operate the giant telescope on the moon for observations on Ganymede. Marland induces Quail to return with him to the moon, where after a number of observations Quail deduces that Ganymede is able to support human life.

Under the command of Marland an expedition sets out to Ganymede in a specially built tractor to explore that world and establish communication with any life that may exist there. His crew consists of Dr. von Lichten, Dr. Ernst, M. Lafourchette and Mr. Dalton. After some exciting experiences in space with meteors they find themselves nearing the giant Jupiter and its puny satellites.

This story began in the December 1930 issue.
Back copies are available at twenty-five cents each.



They rushed in hot pursuit, firing darts. Dalton whirled and emptied the magazine of his automatic.

Now go on with the story

I CONTINUED to watch through the periscope for the remainder of my turn, between looks at the instrument board. The difficulties from the magnetic field were decreasing rapidly, and we were now nearly half a million miles from Jupiter. There remained about three hundred thousand to cover, which would take the next eighteen hours. Dalton was as delighted as I with the view of the heavens and remarked on the appearance of this or that body from time to time. During his watch the fifth of Jupiter's moons in order of discovery, a little globe which revolves close to the surface at an amazingly rapid rate, came into view, its tiny disc peeping around the crescent of the giant planet's illuminated surface.

When at length we turned over the engine-room to von Lichten and Ernst and climbed

to the living quarters we found Lafourchette cleaning and loading a huge automatic.

"What is that for?" demanded Dalton.

"I am prepared," said Lafourchette, waving the gun dramatically. "I alone had the foresight to bring means of protection. If we are attacked by the Ganymedians it is I who will save you." Dalton snorted.

"A fine attitude for an interplanetary ambassador!" he exclaimed. "What if they should attack us? They must be as big as elephants; they could carry cannons around with them."

"As big as elephants, indeed!" retorted Lafourchette. "Is not their world smaller than the earth? And will they not be smaller than ourselves in proportion?"

"Not at all, not at all," ejaculated Dalton. "I weighed one hundred and eighty

pounds on earth; here I will weigh only thirty-six pounds. If they are to weigh one hundred and eighty they must be five times as large as I."

"And who says they are to weigh one hundred and eighty pounds?" exclaimed Lafourchette. "They do not fatten themselves like hogs!"

"Certainly they are too intelligent to starve themselves down to your weight," returned Dalton. I felt that the discussion was becoming too personal, so I took a hand.

"What is the use of idle speculation," I asked, "when in a few hours we can see for ourselves what they are like? We must not be surprised if they resemble nothing we have ever seen. I would advise, too, that we be as peaceable as possible with them; for we are here to understand them, not to conquer them."

"Nevertheless I shall have my pistol handy," said Lafourchette.

To prevent further bickering I suggested that we inspect the air-envelopes and have them ready when we wished to leave the machine. We charged the oxygen-producing apparatus of each, tested them for airtightness, adjusted the microphones which

were to bring us the sounds from outside, washed the glass of the helmets, and hung them on the wall near the air-lock. This occupied most of the next eight hours, at

the end of which it was time for Lafourchette to take his post at the instruments.

Dalton had stood the last watch with him, so it was now my turn; for with only five of us in the crew someone must stand an extra trick once in a while. We took frequent

glances through the periscope at Ganymede, now only a few thousand miles away. An unbroken stretch of clouds covered the surface, hiding the configuration of the ground from view. There was no way of knowing what we would find below them; we could not pick a landing-point, so we headed for the center of the disc, hoping to learn something of the terrain after we had passed through the atmosphere.

At the end of the watch our speed was reduced to about three miles per second; we were so close that I decided to remain on duty, for we would soon enter the atmosphere and I preferred to guide the Comet to its landing place.

I shut off the driver entirely and let the machine coast along under its own momentum. The cloud bank drew nearer minute by minute; the horizon spread away to right and left and in all directions. An hour

passed, and we were less than a thousand miles away. I swung into position the diminutive wings which would serve to steer us like a dirigible through the atmosphere.

THE climax of this exciting story must come as a surprise to everyone. No one could have read the preceding installments and not be aroused to a high pitch of curiosity and intensity of interest. We know that in Jupiter's satellite, little Ganymede, there exists a mystery whose solution may mean tragedy and destruction or possibly the reverse for the people of the earth.

Our expedition to Ganymede must face all those dangers of contact with a strange race, that any interplanetary expedition must chance. There is no knowledge in advance of how the race lives and thinks and feels. We can be sure that in order to establish mental communication with them we will need the most intense application of our wisdom, shrewdness and tact. When two strange species meet there is needed only the minutest show of hostility or misunderstanding in order to erase forever the possibilities of peaceful intercourse.

This story, as an example of the practical problems that will face an interplanetary expedition, is almost a classic.

As the seconds passed I watched the acceleration indicator for the first sign of any drag. Several times I felt sure that we were slowing down, but the indicator was unmoved. Then at last it crept up, curving into a more rapid rise. I turned the forward wings at a slight angle. The *Comet* swung horizontal with a sharp thrust as they caught the rush of wind, while in the periscope's field the cloud bank wheeled dizzily. I leveled off and headed downward slightly, letting the friction of the air retard us.

Even at this height, which I estimated at a hundred miles, our barometer indicated six millimeters' pressure of atmosphere. On this world, because of the slight pull of gravity, a given volume of air weighed only one-fifth as much as on earth; consequently the density would increase only one-fifth as fast, as we descended, and we might expect to find an atmosphere about half as dense as the earth's at the surface.

First Experiences

WE DRIFTED, approaching the cloud bank beneath us and losing headway rapidly. The machine warmed up a little at first, but I kept it high enough so that the thin air would not heat it dangerously. We drew near the clouds, then dipped into their upper limits and were engulfed in a sea of gray-white vapor. It grew darker as the layer above us cut off more and more of the pale sunlight. I wondered whether the mist extended clear to the ground; if so we might suddenly crash into a mountain. I had about decided to head up again until we stopped, when we burst through the under side of the clouds and Ganymede's surface lay in a vast panorama below us. On all sides, as far as I could see in the gathering darkness, lay a body of water; a dark forbidding sea. There was

no guessing at its depth or extent, but at least it offered a perfect landing place. I nosed down more steeply, opening the gravity screen a crack to counteract the buoyancy of our weightless space-ship.

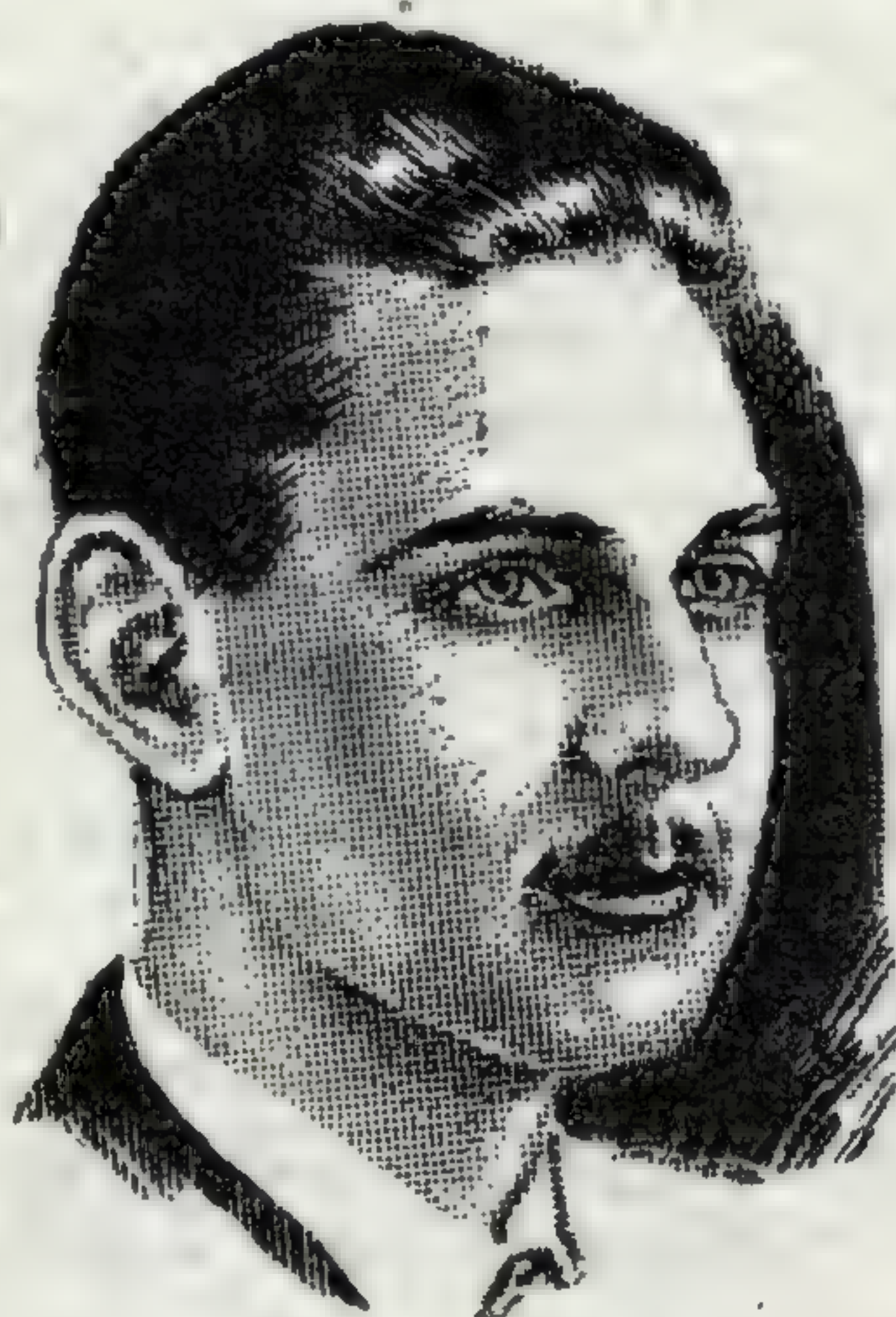
We fell at a steep angle toward the water. It became increasingly difficult to see, and I wondered at the darkness. We were well below the clouds; the light should be as strong here as at their level. I recalled my view of the heavens several hours before; the thin crescent of Jupiter, the sun close by him, Ganymede almost opposite—of course! An eclipse! The satellite passed into Jupiter's great shadow for a few hours once in each revolution with the unvarying

regularity of all celestial things, and this fact had helped navigators to determine the time and locate their position for years. We had chosen the hour of eclipse to arrive; the face of the sun was being rapidly obscured by Jupiter, and unless we landed soon we would find ourselves in total darkness.

I hastened our descent as much as possible. When we were within a few yards of the water, I leveled out, opened the gravity screens wider, and we settled like a seaplane

on the waves, skipping over their crests as we lost speed, then coming to rest on the long smooth swell just as the satellite was shrouded in darkness.

Despite the fact that for a few hours there would be nothing to see, we donned our air-envelopes with one accord and hastened outside the ship, lighting our way with pocket flash-lamps. The *Comet* rested easily on the surface of the water, rising and falling with the long lazy swell. All about us was the intense blackness of a cloudy night, lighted by neither moon nor stars. The waves were unruffled by the slightest breeze. We walked from end to end of the slippery hull, glad for even this liberty.



JOSLYN MAXWELL

Lafourchette, eager to begin gathering data on Ganymede's weather conditions, had brought a thermometer which he fastened to a string and dropped into the forbidding water. Dr. von Lichten took samples of it for analysis, to determine whether it was fit to drink. Of course, under no circumstances would we touch it until it had been boiled, but we would be glad of the opportunity to recharge our tanks and insure an ample supply for the return journey.

A shout of laughter from Dalton attracted our attention. Lafourchette was staring in dismay at the end of his string, from which the thermometer had been neatly bitten.

"Our friend has taken to fishing!" roared Dalton.

"The monster!" stormed Lafourchette. "The unspeakable pig, to swallow my best thermometer! I hope he gets indigestion!"

Our merriment at his expense was tinged with other reflections, however. This positive indication that the little world harbored living creatures was gratifying; but what sort of fearless denizens dwelt beneath the surface of this murky sea? And what untamed terrors might inhabit the land, beside the people we had come to seek? The same vague doubts lingered in the minds of all of us, instinctively drawing us together as though for protection. The inky darkness was not conducive to high spirits, and presently we retired below to await the termination of the eclipse. Before permitting us to enter, Dr. von Lichten insisted on spraying the air-envelopes with disinfectant in order to kill any germs which might have settled on them. This was a tedious procedure, but wise, for we had no knowledge of the bacteria of Ganymede.

WHEN the first streak of gray appeared overhead we got the *Comet* under way skimming above the water in search of the shore line. Since we had no idea which way to turn, we arbitrarily chose the north, and held our course for upwards of an hour before I spied a hazy line on the horizon which quickly resolved itself into a small island. We steered close to it, flying low, but a few minutes' scrutiny sufficed to show that it was a barren stump of

rock, a volcanic peak upthrust from the ocean bed. As we continued our way we sighted another, larger, and still another; presently we were skimming over a maze of islets of increasing size, some covered with dark mossy vegetation. Excited comments burst from the scientists peering through the forward portholes.

Suddenly Lafourchette uttered a shout, pointing ahead of us.

"Another thermometer-eater?" asked Dalton.

"No!" cried Lafourchette. "A huge bird! A flying monster! It's coming toward us! It's going to attack us!"

I turned my periscope and saw an immense, ungainly creature in the act of alighting on our prow. It suggested somewhat a monoplane come to life and endowed with savage ferocity. There was a long gray-black body, torpedo-shaped and scaly, beginning in a prodigious mouth armed with double rows of dagger-like teeth and extending without any semblance of neck to a four-vaned tail, like that of an airplane. Underneath were four stubby legs with which the creature tried vainly to gain a foothold on the surface of our machine, thrashing its twenty-foot wings madly. Spying the periscope it made a rush for the projecting tube, jaws agape. I cringed from the spectacle of that huge maw seemingly bent on swallowing me alive; the *Comet* quivered at the impact of the gigantic body as it tried to wrench the periscope loose. Then, angered at its inability to dent the shining surface, it circled about us, above and below, keeping pace with our swift flight. I put on more speed and the creature dropped behind, plunging into the blazing gas-discharge. We saw no more of it; without a doubt it had been incinerated alive by the terrific heat.

"Whew!" exclaimed Dalton. "I hope that wasn't the reception committee of the Ganymedians!" For my part, however, his jest fell on unreceptive ears; the spectacle of that horrible mouth was too fresh in my memory.

We flew on in silence for another fifteen minutes. The islands became larger and more frequent, while in the distance ahead

of us appeared a dim line of unbroken shore extending to the horizon. I slowed the machine down, watching for signs of civilized life. Presently I sighted a break in the dark vegetation on one of the large islands near the shore, a patch of lighter color. Steering closer it resolved itself into rows of dwellings of some sort, nearly circular as seen from above and apparently built of stone. Without question it was a village, designed by intelligent, reasoning minds. I headed for it, shutting off the power and dropping into the water close to the nearest of the stone buildings. The tractor drifted toward land, grounding gently on a shelving muddy beach.

No one made the first move to go outside. We remained at our vantage points, I looking through the periscope and the others out the windows. There was apparently no doorway to the building before us; it presented a regular stone wall, roughly circular and pierced here and there by narrow openings suggesting the windows of medieval castles. The inhabitants, if there were any, were either unaware of our arrival or suspicious of us. We waited some time for them to put in an appearance, but saw nothing.

"Shall we go outside?" asked Ernst at length. "It may be that the creatures take the *Comet* for some sort of animal."

His suggestion appeared logical. We put on our envelopes and went out, looking warily around for signs of other flying creatures. I led the way, stepping gingerly onto the oozing beach, and we approached the stone building. We were within ten yards of it when we saw an unmistakable movement behind one of the window-like apertures. The next instant there was a hair-raising shriek, followed by a bedlam of indescribable sounds, suggesting the cries of a multitude of beasts in awful torment.

"Stand still," directed Ernst. "We'll only alarm them by moving. Perhaps if we wait they'll come out."

The noises died down gradually, giving place to low rumbles now and then, interspersed with another note—inarticulate, yet with a rising inflection, as if in question.

"They're talking it over," said Ernst in a stage whisper. We continued to stand motionless, while the rumbling went on. Suddenly we saw the ground apparently rising up in front of one of the buildings. A trap door leading underground was being pushed open from beneath. It rose to a vertical position, and from behind it stepped a Ganymedian!

CHAPTER XIV.

A Reception Committee

THERE could be no doubt that the creature standing before us was a rational being despite its fantastic appearance. A walking carrot—a fish on stilts—but no simile can describe the apparition which met our astonished gaze. On the large end of the body, which faced toward us, a broad, wicked mouth and two enormous eyes represented a face which nevertheless lacked any suggestion of a nose. The head joined directly to a tapering body, slanted downward toward the rear. Two pairs of legs as poorly matched as those of a giraffe raised the creature on skinny supports to a height of five feet at its forward end. Behind the head, where there should have been a neck and shoulders, projected something like a pair of arms, jointed at the center and again near the ends. Here they divided into tentacle-like fingers several inches in length. The arms must have measured fully four feet from body to tip. Save for a belt about its midsection the creature was unprotected by clothing or fur, exposing a shiny slate-gray skin to the weather. In its left "hand" it carried a weapon which I judged to be a sort of rifle. It consisted of a bright metal tube a couple of feet long fastened to a cylindrical chamber several inches in diameter. The creature grasped the weapon in its skinny tentacles, half raising it as though in doubt whether to turn it on us.

Ernst slowly raised his hands over his head in a gesture of peace, but the Ganymedian evidently did not understand, for it levelled the weapon. Lafourchette reached for his pistol, but he was too slow; the

barrel was trained on him in the twinkling of an eye, there was a slight "pop", and a missile struck his envelope squarely at his chest. He was uninjured, though startled, and fired his automatic wildly into the air. At the noise the Ganymedian disappeared behind his trap door, slamming it shut, while a chorus of shrieks filled the air.

"Now you've done it!" stormed Dalton. "They'll never come out after that."

But we had not seen the last of the Ganymedians. On all sides of us trap doors opened, pouring forth creatures armed with weapons like that of the first. They formed a semicircle and at a signal from one they fired a volley of shots. Missiles struck our envelopes, our helmets and the ground about us in a perfect hail. They were unable to penetrate our thick covering, though not a few stuck in the fabric until we fairly bristled. Then abruptly the fusillade ceased and the Ganymedians fled to their stone dwellings.

"What's to be done?" I asked.

"I suggest that we return to the *Comet* and talk the matter over," said Ernst.

Accordingly we left the hooting Ganymedians and returned to our ship. Dr. von Lichten picked the darts off our envelopes before permitting us to remove them, saving a few for examination.

"Poisoned, perhaps," he said by way of explanation.*

Gathered once more in our living quarters we considered how to make our peaceable intentions known. Dalton immediately took Lafourchette to task for firing his gun, and the two had little to offer in the way of constructive suggestions. It was Ernst who first saw through the attitude of the Ganymedians.

"Let us reason from their point of view," he said. "Suppose it was they who had come to earth. Knowing nothing of its geography, where would they land? In the most conspicuous place—the largest body of water, or the greatest plain. Now suppose that, having landed there, they went to the nearest settlement. What would they

find? A fishing village, or a country town; certainly not the home of our scientists. That is exactly what we have done; we have met with a group of uneducated, suspicious beings to whom we are outlandish and frightful. What more natural than that they should fear us? It is not here that we shall find those who have tried to communicate with us; we must seek a larger settlement, a civilized settlement perhaps."

Without further ado we left the settlement by the water and turned inland. As before, I steered while the others stationed themselves at the windows armed with binoculars. We swept back and forth in a zig-zag course covering a strip of land a hundred miles wide. The vegetation gradually lost its dark color, acquiring the green shade of that on earth, and there were taller plants, sometimes reaching a height of a hundred feet. There were many small creatures in the air. They might have been birds, though they did not come close enough to be seen clearly.

Presently Ernst, who was stationed on the left side, called out:

"Here's another of those flying animals."

"Steer away from it!" exclaimed Lafourchette. "I have seen enough of them to satisfy me."

"No, steer closer," said Ernst. "This one is different. Perhaps—yes it is! It's a flying machine."

"A flying machine!" repeated Dalton and Lafourchette in chorus. They rushed to Ernst's window and quickly verified his statement. "Yes, it is!"

I picked up the machine in the periscope and swung after it, keeping pace. The pilot must have sighted us, for he increased his speed, but I was easily able to follow him. I remained several miles behind, not wishing to alarm him, but he seemed determined to shake us off. He executed a number of maneuvers, diving as though to land, then climbing to a height of several miles. I followed him with ease, however, and he presently gave up the attempt, heading off in a different direction and keeping steadily on this new course.

As I swung in behind him the radio sets

*This later turned out to be the case. The guns were glorified blow-guns, fired by compressed air stored in the cylinders attached to them.

of our air envelopes began to speak—high pitched jerky sounds, resembling somewhat the signals of our International code. I surmised that the plane ahead was reporting our appearance by some kind of wireless. Then the pilot slowed down to barely fifty miles per hour and traveled along at an altitude of a few thousand feet.

Fifteen minutes or so later, Dalton reported the appearance of a second machine on our right. It had crept up behind us and was now keeping pace a thousand feet or so away. Presently another appeared, and another. Looking back I saw a huge fleet overhauling us, spreading out around us, until we were surrounded on all sides, above and below, ahead and behind. Whichever way we looked, there was a vast throng of planes—hundreds of them, following us in a silent convoy. There was no sign from them; they kept their distance in perfect formation. We could not guess their intentions. There was not a hostile move from any of them. The members of our party fell to discussing them.

"Perhaps it's a reception committee," suggested Dalton. "They're escorting us to a landing place."

"But then why are there so many of them?" inquired Lafourchette.

"An accomplishment as great as ours deserves a big reception," returned Dalton.

However, our wondering was cut short. In the distance a pall of smoke appeared, surrounded by circular buildings like those in the waterside village. We were approaching a Ganymedian city. Our convoy drew in closer, descending slowly. It was obviously their wish that we should land. As we drew closer to the city our speed was further reduced; the planes below us withdrew, those above came closer, and those on our flank formed a circle about us, wheeling about as though to cut off our escape in any direction. We were being forced toward a large field, about which were more planes, and large buildings resembling hangars.

We descended, perforce. Half the machines followed suit, surrounding us in a close circle, while the others remained aloft, forming a moving dome over our heads.

From one of those on the ground appeared several four-legged Ganymedians who approached the *Comet* boldly and peered into the windows, waving their tentacle-like arms.

"They want us to come out," said Ernst. We donned our envelopes and left the machine through the air-lock, Lafourchette carrying his gun despite Dalton's admonitions. The Ganymedians stepped back, forming a semicircle about the air-lock, obviously inviting us to descend to the ground. We closed the air lock and jumped down, not without some misgivings, but the creatures seemed friendly enough, waving their arms and giving voice to questioning hoots. One of their number advanced and extended his arms in a reassuring gesture. Ernst stopped forward to meet him, and endeavored by pantomimic gestures to show our peaceable intentions. I was intent on watching him, and did not notice for a moment that the passengers of the other planes had come out and were slowly advancing toward us. Then von Lichten uttered a shout:

"Look out behind!"

Trapped!

BUT he was too late. A dozen of the skinny creatures had climbed over the *Comet* and as we turned they jumped upon us, pinning us to the ground. Before we realized what had happened we were overwhelmed by the crowd; strong metal cords were fastened about our arms and legs, and we were bound, helpless prisoners. Amid shrieks of anger we were picked up bodily and carried to the nearest plane, thrown roughly into a dark compartment and locked in. The plane took off with a rush, bound we knew not where.

I strained at my bonds, but it was useless. The darkness was pitchy; I could not tell where the rest were, or whether they were all in the same plane. I called softly:

"Ernst!"

"Here," came the whispered response.

"Are we all here?" I asked. Four whispers assented. At least we were not divided.

"What does all this mean?" I asked.

"They seem to take us for enemies," said Ernst.

"What shall we do?" asked Dalton.

"Nothing now," said Ernst. "Wait until we can see."

As we spoke the plane landed with a slight jar, the compartment was opened, and we were carried out one at a time onto a flat room. We appeared to be in the midst of the large city, on top of one of the buildings; but I had time for only a fleeting glance before I was bundled with the others onto a platform which descended swiftly into the depths of the building. We must have been carried down a hundred feet or more when the platform came to a stop and we were carried into a small room with stone walls. It was devoid of furniture and had only one window, a tiny slit near the ceiling. Beyond a doubt we were in a prison cell.

Our captors removed the metal cords from our hands and feet, and departed, closing a massive stone door behind them.

"Well," said Dalton explosively, "what do you make of this?"

"We are prisoners," said Lafourchette dejectedly. "We have come four hundred million miles to make friends with them, and they treat us like invaders."

"That's not the point," said Ernst. "We have aroused their anger in some way. We must explain the situation to them and gain their confidence."

"What do you suggest?" I asked.

"I believe they will presently return to feed us and examine us," said Ernst. "I shall try to communicate with them, tell them who we are and where we are from. Perhaps we resemble some other race which inhabits this globe, with whom they are at war. But when they know that we come from the earth they cannot fail to realize their mistake, and welcome us accordingly."

"And if they do not—" said Lafourchette, producing his gun.

"No!" exclaimed Ernst. "We must not antagonize them in any way. That will only confirm their suspicions of us."

"I should prefer to return to the *Comet*

and leave this inhospitable race," said Lafourchette.

"Don't be discouraged," said Ernst. "We have come a long way for the opportunity to meet these creatures. Dr. Forscher would be disappointed in us if we failed to reach an understanding with them."

I admired the man's level-headed courage. In spite of the alarming turn of affairs he had not lost sight of the purpose of the expedition. His attitude buoyed our spirits greatly, and we looked forward eagerly to the return of our captors.

To pass the time, we examined the walls of our cell. They were built of heavy blocks of a kind of granite and there was not a flaw anywhere. It was obvious that escape from the cell was out of the question. I hoisted Lafourchette to my shoulders and he examined the window. It was about two feet high and a little over a foot wide. The blocks were joined together by a tongue and groove in each, neatly polished to a perfect fit. Several heavy bars of metal ran crosswise, blocking the opening effectively. Lafourchette reported that he could see a large circular park outside, surrounded by tall buildings of similar shape. Evidently this circular form was the predominant note of their architecture, just as man-made buildings are almost universally rectangular.

WE heard footsteps beyond the door, and presently it swung open, admitting a number of Ganymedians. They were without clothing as usual, and each was armed with a mechanical blow-gun shooting poisoned darts. One of them advanced and, singling out Ernst, took him to the opposite corner of the cell, where they began a close examination of him. They peered through his helmet and tried to remove it, but without success. Apparently they were puzzled, for they uttered hoots of amazement and stopped from time to time to raise their arms and move their fingers rapidly. I perceived that this was their method of conversation; their language consisted of finger-signs, like those of deaf mutes. They searched Ernst closely for weapons, turned him about, plucked at the

heavy envelope, and subjected him to an intense scrutiny. When they had finished they led him back to the rest of us, and took Dalton next. Perceiving that each of us was to be similarly searched, I whispered to Lafourchette:

"Hide your gun; they'll seize it if they find it."

He withdrew behind the rest of us and concealed the gun in the corner of the room. The movement attracted the attention of our examiners, and they stared at us searchingly for a moment, but seeing nothing wrong they finished their scrutiny of Dalton. Lafourchette came next, and to our relief they had not noticed that he carried the gun when we were captured. However, they realized that the heavy envelope was not his skin, and motioned him to remove it. He refused, and one of them produced a sharp knife-like instrument. Dr. von Lichten cried out in protest and started forward, but he was immediately seized and held. We were forced to watch while the Ganymedians slashed open Lafourchette's envelope and clothing. He winced as the knife-blade scratched his skin, and the Ganymedians emitted howls of amusement.

"This has gone far enough," growled Dalton, and with a swift movement he picked up the gun, uttering a yell which attracted the attention of the Ganymedians. The wielder of the knife drew back his arm to throw, and Dalton pulled the trigger. The gun roared; the smoke cleared, and the knife-thrower lay dead on the floor. The others fled in terror, slamming the door behind them. We heard the bolt snap into place and we were alone once more.

"Are you hurt?" demanded von Lichten of Lafourchette.

"Not at all," replied the latter. "A mere scratch; but the devils have ripped my envelope."

Dr. von Lichten examined his cut, from which blood was trickling.

"If only I had my medicine case," he exclaimed. "An open wound, in this strange atmosphere—there is danger of infection."

"Do not worry," said Lafourchette. "I shall be all right. I am only sorry that it

was necessary to shoot. They will never forgive us."

"I fear you are right," said Ernst. "However, let us learn what we can from this dead creature."

We dragged the Ganymedian to the light beneath the window, and Dr. von Lichten set about examining the body. I possessed myself of the creature's blow-gun and knife and stood back. Corpses, human or otherwise, have never had much attraction for me.

The doctor brought to light several interesting features of the physical nature of the Ganymedians. Each hand had six fingers of nearly equal size, about eight inches long. There were five joints in each, which were capable of bending in both directions, enabling the hand to close either forward or backward. There were likewise six toes (if they may be called such) on each foot, but with only one joint in each, and entirely covered with a scaly substance, instead of the nail at the tip of the corresponding human members. The skin of the creatures was likewise scaly and glistened like that of a fish.

Prying open the mouth, the doctor discovered that there was no tongue, explaining the lack of an articulate language among the creatures. Between the head and shoulders were tiny openings which evidently served as ears, though their form suggested that they might be remnants of what had been gills in prehistoric times. The striking resemblance of many physical characteristics to those of water creatures of the earth pointed to the possibility that they were akin to that family, having perhaps emerged from their abode in the ocean to evolve into intelligent creatures on land.

CHAPTER XV.

A Race With Death

AFTER a time our attention was attracted by a commotion outside our window, as of the gathering of a throng of people. I hoisted Lafourchette to my shoulders again, and he reported that this was indeed the

"They are gathering from all sides," he reported. "They shout; they gesticulate; they point toward this building, toward our cell. They seem exceedingly angry. Some are bringing tree-trunks, or logs; they pile them in the center of the great circle. Now they are setting fire to them. They are building a bonfire. They dance about it, shouting with rage; still they point to our cell! Can it be that the bonfire is for us—that they intend to burn us alive?"

"Let them try!" exclaimed Dalton. "As long as we have this gun they'll have a fine time getting us out!"

However, our defense was not to be as easy as that. Presently Lafourchette reported:

"They are setting fire to something on the end of a stick. It burns with a blue flame. Now they are approaching our window with the stick. There is a lump of something yellow on the end of the stick; it burns dully, with heavy fumes. It is sulphur! They are going to asphyxiate us with burning sulphur! Then they will carry us to the bonfire!"

"Give me the gun!" exclaimed Dalton. "Let me up there! I'll stop them!" He climbed to the window and leveled the automatic at the approaching throng. The gun barked, and there was a shout of dismay from outside.

"They're running away," said Dalton. "That'll teach them not to monkey with us!"

But they were not through yet. The crowd withdrew to a respectful distance, taking with them the sulphur torch. Presently some of them carried it out of our view, and we wondered apprehensively what they were up to. We heard, faintly, the tramp of feet above us, and shortly there was a choking whiff of sulphur dioxide from the window. Dalton pressed his face against the bars, and reported:

"They are hanging the torch from a rope, just above the window. The fumes are heavier than air, and some of them drift into the cell. It'll take longer that way, but they'll get us eventually!"

He climbed down, and we faced one another in despair.

"I'm afraid this is the end," said Ernst. "If only—"

The door grated open, its lock twisted and cherry red with heat. Beyond it stood a Ganymedian—a strange Ganymedian. His attitude bespoke friendliness, not ferocity. As we surveyed him we noted that the bestiality which stamped the features of our captors was lacking; his massive head and kindly eyes indicated a superior order of intelligence. Somehow, we felt this creature was our ally.

He carried a peculiar looking instrument, whose lingering glow indicated that it had been used to melt the bolt of our cell door. At its tip was a tiny glowing point which was raised to a white heat, in some manner, electrically or chemically. Back of this was a parabolic mirror which caught the emitted energy and focussed it at a point a few feet beyond the instrument. The focus could be shifted forward or back by sliding the mirror along the handle. It served the purpose of a blow torch, and from the neatness with which it had severed the steel lock, an efficient one.*

THE Ganymedian motioned us to come out of the cell. The sulphurous fumes left us no choice but to obey, so we followed him into the corridor. We were led through a series of passages to the far side of the building, where a barred window blocked our path. Our guide neatly clipped off the bars with his torch and we dropped to the ground outside. A row of circular buildings confronted us, beyond which was another open park. We quickly made our way there and saw before us a machine as unlike those we had encountered as our guide was unlike the hostile crowd which had imprisoned us. It gave every evidence of being tremendously speedy, yet withal it was large and roomy.

We ran for it at a signal from the Ganymedian. We had covered half the distance when a shout announced the discovery of our escape. The crowd rushed in hot pursuit, firing darts. Dalton whirled and emp-

*We later learned that the Ganymedians made use of this instrument because their bodies would not stand exposure to the temperatures necessary to cut steel at close range.

tied the magazine of the automatic, accounting for four, while I stretched another on the ground with the dead Ganymedian's air-gun. Then we reached the machine and climbed aboard through a lowered door, which clanged shut behind us. The plane shot into the air with a silent rush, while the enraged crowd below us fired futile missiles and waved their arms in the air.

From external appearances the machine bore little resemblance to man-made machines. To be sure there were similarities here and there; the ship had wings and was shaped in general like the familiar type of monoplane. But inside, things were bewilderingly different. There were no seats; the four-legged Ganymedians squatted on their hind legs in the fashion of earthly quadrupeds. The controls were likewise unfamiliar—a dial here, a lever there, and nothing commensurate with the size and power of the machine. I judged it to be controlled by compressed air or electricity. Strangest of all was the motor. It aroused my interest, and lacking the ability to question the crew I determined to discover as much of its mechanism as I could.

To begin with, there were no cylinders, and this set me to wondering about its source of power. I quickly discovered an odor identified it as some member of the hydrocarbon group, from which gasoline springs. Yet instead of being fed into a cylinder, compressed by the upstroke of a piston and fired by an electric spark, it apparently burned continuously in a small chamber, where the gas was maintained under pressure and fed into a set of rotating vanes. It was a gasoline turbine—the dream of internal combustion engineers!

The plane was heading away from the ocean, toward that side of the side of the satellite which is never lighted by Jupiter. The clouds thinned rapidly, and below them we could see the ground, bare for the most part—with clumps of desert vegetation here and there. These grew more and more sparse, finally disappearing altogether, and we flew over a vast waste of sand. Overhead the stars shone weakly, pushing their faint rays through the pale sunlight. Jupiter's great body, its darkened side

turned toward us, sank lower and lower, finally disappearing below the horizon. The sun followed him a few moments later as we crossed to the back side of the satellite.

In the darkened heavens Callisto and the four tiny outer satellites threw a ghostly moonlight on the swift panorama of the desert. We were flying low now, yet the brilliance of the starlit sky showed that the air about us was thin and dry. The great pull of Jupiter—four thousand times stronger than that of the moon, even at this distance—had raised a permanent tide in both the air and water, leaving the outer side of the satellite with little atmospheric covering and no moisture to speak of. Dr. Forscher had predicted a cloudless region on Ganymede; we saw now the reason for its existence.

The plane suddenly slackened its pace and began to descend. Looking ahead we saw the lights of a tremendous city, extending for miles in all directions. Tall cylindrical buildings marked a magnificent skyline above which many small planes scurried in a bustle of busy traffic. As we approached, the air was cleared to make a pathway for us, and we settled gracefully to the top of one of the nearby buildings. An elevator waited to carry us to one of the lower floors, where we were escorted to a large circular room.

It contained little furniture—a strange looking table, a carpet, and a few bizarre cushions in lieu of chairs. The windows were without glass, for the temperature on this world varied but little and there was no need for protection against the weather. A number of large globes filled the room with a soft heatless glow resembling intensified moonlight, in which the blue shades of the room were brought out distinctly.

The Story of a Destiny

OUR guides left, save one, who turned to us and pointed to his mouth with a questioning hoot. I surmised he was asking whether we were hungry, and responded to his gesture vigorously. He disappeared, and Dr. von Lichten observed:

"There's no telling what sort of food he'll bring us. We'd best be careful."

"I'm so hungry I could eat a tree," said Dalton.

"In order to do so you'll have to take off your helmet, my friend," said the Doctor. "It's risky; remember that."

"Going without food and water is more than risky, it's certain death!" retorted Dalton. "Our oxygen won't hold out much longer, and we can't recharge the apparatus. I'm for taking the envelopes off!" Suiting his action to the word, he removed his helmet and stripped off the flexible covering. The rest of us followed suit with some hesitation. Dr. von Lichten last of all. However, there was no use trying to refute the logic of Dalton's statements, and we felt rather secure, since Lafourchette's ripped envelope had apparently caused him no discomfort.

Presently our rescuer reappeared with several metal platters bearing food. It was entirely unfamiliar, but appeared to consist for the most part of raw vegetables and fruits of some kind. If any food on this world would be safe for us, that should, so we decided to take a chance. After a cautious nibble or two we consumed the whole meal with great relish. A container of water accompanied it, and was emptied in short order. It had a queer fishy taste but we did not mind it. Then we stretched out on the rug for a nap. The Ganymedian climate was quite cold, and we found it necessary to wrap the carpet around ourselves, but otherwise we slept comfortably for several hours.

We were awakened by the reappearance of the friendly Ganymedian, who seemed much taken aback at the spectacle of the five of us unconscious on the floor. He seemed quite relieved, however, when we sat up and waved to him, but he was obviously puzzled. It occurred to me that perhaps sleep was unknown to him. Some terrestrial creatures are known to spend their entire lives awake.

He brought with him several sheets of greenish, parchment-like paper, and a pencil which deserved the name of "lead-pencil" more literally than ours, for it con-

sisted of a stick of lead sharpened to a point. With these writing materials he seated himself at the table and motioned us to do likewise. We gathered around, sitting on the cushions, and watched. He handed the pencil and paper to Ernst, pointed to him, and hooted in evident interrogation. Ernst wrote, "Man", and pointed to each of us in turn. Then the Ganymedian pointed to Ernst again, and hooted once more. Ernst wrote his name, then that of each of us; indicating to whom the names belonged.

From names he progressed to parts of the body, objects in the room, and other things on Ganymede, sketching them at times to make himself clear. The Ganymedian exhibited a remarkable aptitude for understanding the sketches and the words, and it took but a short time for him to learn to write brief sentences in English. For the sake of simplicity Ernst spelled words phonetically and gave all the verbs regular endings, writing "hed" for head, "fut" for foot, "runed" for ran, and so forth. The language thus evolved was clumsy, but it served the purpose of a means of communication, which was all that was required.

Then they took up some simple arithmetic, writing out the Arabic numerals. A curious yet nevertheless natural circumstance arose in connection with this. Our number 10 represented 12 to the Ganymedian. The explanation of this was easily seen when we remembered that there were twelve fingers on their hands. When mankind first learned to count, he used his fingers as the base of his system of numbers.

When he had counted up to ten he started over again, counting "ten and one, ten and two," and so on, indicating the ten by a digit in the second column. When a hundred was reached, being ten times ten, he added a third column. The Ganymedians counted right up to twelve in the first column, and the figure 10 represented twelve; 11, twelve and one. 100 means twelve times twelve, or one hundred and forty-four in our system.

A NOTHER difference between our physical make-up and that of the Ganymedians appeared when we tried to name

the colors of the spectrum. The four-legged scientist wanted to assign the adjective "black" to things which appeared red or orange to us, while he could distinguish differences above violet which were invisible to our eyes. This meant simply that the range of wavelengths which affect the human retina was slightly lower than the corresponding limits of visibility to the Ganymedian eye.*

We spent several weeks in building up a vocabulary which the Ganymedian could understand. We made no attempt to develop a spoken language, since the Ganymedians could not speak, and we could not learn their finger-language readily; but with the use of the table of words we had recorded we were able to write intelligible messages at the end of this time.

At length we were in a position to exchange ideas with considerable facility. Then the Ganymedian began to ask us questions about ourselves, where we had come from, how we had happened to land in the city near the ocean, and the details of our capture. When we had satisfied his curiosity, he explained the situation on his planet to us in some detail. For the sake of clearness I will summarize his statements in plain English. What he told us was essentially as follows:

* * * *

On Ganymede, as on earth, life began in the sea. The land at that time was barren and the air unbreatheable for lack of oxygen. Certain forms of fish developed the knack of gliding above the surface on their enlarged lateral fins, much as the flying fish of the earth; and when plant life appeared on the land to provide food and oxygen in the air, they became amphibious, living both on the land and in the water. Certain of these flying amphibians eventually came to live on the ground entirely, and gradually lost the ability to fly; while others soared in the air and preyed on weaker creatures. You met one of these amphibians shortly after you arrived here; there

are many like them, some still wild, some however we managed to tame to the use of our race.

My own people are the descendants of that species which lived on the ground, surviving by its superior cunning rather than relying on brute strength. They became civilized, learned to cooperate with one another, and established a democratic government. As our knowledge advanced, we developed industries; a class of laborers appeared to work for wages under the control of the capitalists. Unfortunately complications developed from this situation. The laborers were dissatisfied with their lot. There was unemployment now and then, and the industries were run with a view to producing cheaply and selling at high prices, with no regard to the quality of products.

This finally led to the seizure of the government by the workers, but in their poorly educated state they were unable to manage it, and chaos resulted. Finally a brilliant student of economics gathered around him a following of intelligent people, ousted the laborers from their control, and set up a dictatorship. Under his regime and those which followed our civilization advanced by leaps and bounds. Institutions of learning were established, and the study of science assumed an important place in our order of things. More and more of the laws of nature were discovered; the scientists published their discoveries for the benefit of the world, and the race grew prosperous.

However, it seems that the nature of our people is to scoff at that which they do not understand. Scientists were well paid for their work in those days, and the working class and middle class could not see the practical value of theorizing about chemistry, physics, astronomy, and the like. They became dissatisfied, and threatened to confiscate the pay of the scientific class and force them into exile if they did not turn their efforts to tasks which would result in the immediate enriching of the world. The scientists gave little heed to the mutterings of the multitudes, until one day they rose in open revolt. The rebellion was quelled, but it became apparent that the rule of the

*A later experiment showed the Ganymedian limits of visibility to lie roughly between 6500 and 3500 Angstrom units, as compared with 7500 and 4000 for the human eye. (1 Angstrom equals 1/100,000,000 centimeter.)

intelligent students of science, economics and politics was threatened.

The final crisis was brought about by an experiment with which you are doubtless familiar. I refer to the firing of projectiles at the planets of the solar system, in an effort to elicit a response and so determine whether or not they were inhabited. This experiment was misunderstood by the lay public, and a rumor circulated that the rulers were trying to bring people from other planets to keep the masses in subjugation. A bloody war resulted, in which the ruling class was driven from the land into this desert which covers almost the entire half of Ganymede which turns away from Jupiter.

Many of them died of thirst and starvation, but a number escaped to the spot on which this city now stands, and succeeded in recovering from the air enough hydrogen, oxygen and nitrogen to irrigate a patch of the desert, fertilize it, and raise food. With the aid of their scientific knowledge they built this city, supplied it with water and plant-food, and now a race of a million people flourishes, advancing their civilization and adding to their knowledge.

MEANWHILE the remaining classes of the population around the ocean have carried on their former form of democratic government, and have reverted to their old form of cut-throat competition. The government is run by the workers and manufacturers, aiming as always at selfish profiteering. They lay waste the forests, mine coal and burn it without regard to the available supply; release mineral oils and gases with reckless abandon. In a few generations there will be no more natural fuel on the planet unless they are stopped. They make use of the inventions our scientists had developed before they drove us out, but there is no progress among them at present; every student, research worker and inventor has been exiled.

Realizing that they will destroy the planet in their greed if we do not intervene, we have tried several times to conquer them and reestablish ourselves as their rulers, but without success. They have defeated

us, in spite of our scientific knowledge, through sheer force of numbers. For this reason we are now seeking means of raising a large army equipped with the most deadly instruments of warfare we can devise. Fully a third of our number is trained to military service, only the aged, the very young, and the scientific geniuses being excepted.*

Now that you are acquainted with the state of affairs on Ganymede, you will realize our need for help. When the news of your arrival and capture was reported by one of our spies, the machine in which you were brought here was immediately dispatched and we rescued you, hoping that you might consent to send men from the earth to assist us in capturing the land about the ocean and regaining our rightful place as its owners.

* * * *

THE five of us read the message of the Ganymedian in silence. When we had finished, we looked at one another in amazement.

"The proposal is ridiculous!" exclaimed Lafourchette. "The outrageous presumption of the creature, to suppose that we will supply him with men and arms from the earth, to interfere in a war which does not concern us or the people of the earth in the least!"

"Softly," cautioned Ernst. "I would suggest that we consider the proposal, without committing ourselves definitely. Remember, we must have the help of these people in the desert to get the *Comet* back."

He took the pencil and a sheet of paper and wrote:**

"We appreciate your situation and sympathize deeply with you. We ourselves will be willing to help you to the utmost, but we must of course return to earth, ob-

*The Ganymedian did not mention females in this list, for a reason that we later discovered; there is no difference of sex among them. Periodically each mature creature on the planet lays eggs, which are fertilized by ultra-violet rays. In the case of the lower animals the sunlight performs this function, and the eggs are hatched by being buried in the soil, where the heat of decaying vegetation keeps them warm. The intelligent race makes use of ultra-violet lamps and incubators. They are enabled in this way to select only the most perfect of their young for maturity, and keep the population within the limits demanded by the city's resources.

**This and later quotations are not literal translations of the dialect actually used.

tain permission of its governments, and enlist the necessary men, to say nothing of building the machines to transport them. The first thing to be done, therefore, is to recapture our space-flyer, the *Comet*; which still rests in the city where we were captured."

"I understand that," replied the Ganymedian. "Your acceptance of my proposal is most gratifying. Let us now consider means of recapturing your flyer."

He explained to us that there were many difficulties involved. To begin with, no airplane was permitted to land on any flying field on Ganymede unless it bore a license number issued by the government. Furthermore, each field had a particular pass-word which was changed from day to day. These measures, he told us, had been adopted to prevent the landing of enemy planes. In short, a landing could only be effected by force, and in view of our escape, the *Comet* would doubtless be heavily guarded. A surprise attack would be necessary.

"I noticed," he said further, "that one of your number made effective use of a weapon which is strange to us. I mean that blunt instrument carried in the hand which exploded with violence and dropped our pursuers in their tracks. If we had a number of those, it would be comparatively easy to drive off the guards and reach the *Comet*."

"You mean the gun," wrote Ernst. "They are not hard to make if you have the necessary tools and materials."

"We have excellent machinists," replied the Ganymedian. "You need only give us the principle by which it kills. We will attend to the rest."

CHAPTER XVI.

A Mutual Discovery

WITH Dalton's help, Ernst explained the construction of the gun. The formula for black powder presented difficulties, for it was necessary to first explain something of our system of chemical notation. The first two ingredients, sulphur and

carbon, were easily named, but the third and most important, nitre (potassium nitrate), was not easy to describe. However, by naming its characteristics Dalton learned that the substance was well known and used by the Ganymedians,* who had found deposits of it in the desert. The scientist wished to take Lafourchette's automatic as a model, but we demurred, as we felt safer with it in our possession.

"It will take until the next rising of the sun to make the guns," the Ganymedian wrote. "At that time we will be prepared to attempt the capture of the *Comet*."

It now lacked some thirty hours of sunrise, during which we had nothing to do. We obtained the permission of the Ganymedian to explore the city, and he gave us a map so that we might find our way around. We took with us the list of words we had compiled, so that we might ask questions from time to time, and we were given letters of introduction explaining who we were.

Armed with these documents we set out. The city presented many interesting sights and not a few surprises. The first thing which struck our attention was the fact that there was no vehicular traffic on the streets. Overhead the air was full of flying machines of all sizes and types which served the purposes of transportation. These landed on and departed from the roofs of the buildings, never descending to the level of the streets. Pedestrians hurried about, intent on their own business, scarcely giving us a glance. I thought ruefully of the mad stampede for souvenirs which would have followed the appearance of a party of these creatures in the streets of an American city, and could not help admiring their dignified self-control.

We entered what appeared to be the shopping district and gazed into the stores. The lack of gaudy display and high-pressure advertising aroused our wonder, and we inquired of one of the shopkeepers why this was so. He explained, using our improvised

*It is a queer anomaly that although the Ganymedians were able to shoot projectiles hundreds of millions of miles into space, they had missed altogether the application of explosives to firearms. The reason we never discovered.

dictionary, that each store enjoyed a monopoly in its line, the prices being fixed by governmental regulation. This did away with the waste of time and money spent in trying to influence the buyer to decide among a number of essentially similar articles.

Later we found our way to the University at which this nation of scholars received its education. We inquired our way to the department of astronomy, and found it located on the roof of one of the immense circular buildings. There were a number of telescopes there, the largest of which was a reflector somewhat similar to those on the earth. Its mirror was about fifteen feet in diameter, not quite as large as the earth's 200-inch—but it was remarkably well built, especially in view of the fact that optical glass was unknown to the Ganymedians. Throughout the instrument metal mirrors took the places of lenses.

I asked for a chance to look through it, and the astronomer in charge agreed willingly. I would have chosen to take a look at the earth from this distance, but that was impossible at present. The sun had set, and here the earth, like Venus, was a morning and evening star, close to the sun. I chose Pluto, whose great distance has prevented the earth from learning much of its physical nature.

"Pluto?" repeated the astronomer, "which of the planets do you call by that name?"

"I beg your pardon," I wrote. "Pluto is the name we give to the outermost planet of the solar system."

The telescope was trained on the heavens and I peered into the eye-piece. A tiny disc of pale yellow, so faint as to border on invisibility, occupied the center of the field of view. I was puzzled; the power of this instrument should have shown Pluto much brighter and larger.

"This is the outermost planet?" I asked. The astronomer nodded confirmation.

"The ninth?" I inquired.

"To be sure," he replied.

"But surely this magnificent instrument should show it better," I persisted. The astronomer was displeased.

"Perhaps you expect too much," he said.

"At fifteen times our distance from the sun it receives very little light."

I saw that something was amiss. Pluto is less than nine times as far from the sun as Jupiter. Could it be that this was the trans-Plutonian planet that the younger astronomers on earth were talking about? Yet the Ganymedian astronomer called it the ninth planet.

I MADE a rapid sketch of the solar system as I knew it, showing the orbits of the nine planets with their distances from the sun, and presented it to the Ganymedian astronomer. Comprehension dawned on his features, and he seized the pencil in excitement.

"We revolve around the *fifth* planet from the sun?" he demanded. I agreed.

"Then there are ten planets in all! We have never seen the innermost—it is too close to the sun. You have never seen the last. What I would not give for your vantage point and the knowledge you must have of the inner planets!"

"I would be equally glad of your opportunity to study the outer ones," I returned. "Are you sure here are none beyond this tenth?"

"We cannot tell," he replied. "If another exists, it is much too faint to be found by accident. Some of us think there are irregularities in the behavior of the tenth which may indicate another, but it has been known too short a time to say definitely. Our calculations show that it takes hundreds of years to circle the sun once. Until we have determined its path accurately and eliminated the effects of all the others upon it, it is useless to consider the question of still another world."

I spent some time conversing with the astronomer, telling him what I knew of Mercury. In return I learned that my theory of the manner in which Jupiter's satellites received their heat was correct; electric currents induced by his magnetic field were responsible. The scientist also satisfied my curiosity regarding the shooting of sulphur meteors to the earth. He explained

*The sighting of this planet was announced by the Lowell Observatory after Mr. Marland's departure from the earth.

that they had built an enormous cannon, three feet in diameter and over two thousand feet long, buried in the earth in the manner of the *Columbiad*, around which Jules Verne wrote his entertaining story "From the Earth to the Moon." This cannon, he told us, had been located very near the building which housed the observatory, for the desert city was located at the point farthest from Jupiter, where the sun and the inner planets passed directly overhead once every seven earth-days. He also explained how the projectiles had been constructed so that their brilliant blue light would attract our attention*

This trip of exploration served to pass the time while the guns were being made. Finally the hour of departure arrived with the rising of the sun, and we set out to recapture the *Comet*. A crew of twenty Ganymedians in addition to ourselves climbed aboard, each armed with an automatic pistol and a hundred rounds of ammunition. We took off with a rush amid shouts and hoots from the onlookers, and headed for the cloudy land surrounding the ocean. We five had worn our air-envelopes, for they gave protection from the poisoned darts of the hostile Ganymedians and provided an easy means of conversation at a distance, through the radio equipment. As the miles flew away below us a tension grew on the entire crew. We realized more keenly now than at any time before our desperate situation. At all costs we must regain the *Comet*; yet we would have a battle on our hands, with the ever present possibility of capture and death.

*The construction and functioning of the projectiles were as follows: There were three concentric shells, the outermost of heavy aluminum, the second of brittle clay, and the third of copper. Between the first and second was a layer of hydrogen chloride, frozen at -110 degrees Centigrade. Between the second and third was supercooled ice. The shock of discharge broke the second shell, mixing the ice and hydrogen chloride, which were melted by the heat of the projectile's passage through Ganymede's atmosphere, and at the same time kept the copper shell cool. The solution of hydrogen chloride in water formed hydrochloric acid, which destroyed the aluminum shell. This acid does not attack copper as it does aluminum, so the inner shell reached the earth intact. Inside it was a mixture of sulphur, manganese dioxide and potassium chlorate. The last contains oxygen in combination, which it gives up when heated to about 200 degrees Centigrade in the presence of manganese dioxide. The heating was accomplished by friction with the earth's atmosphere. Sulphur burns in pure oxygen with a brilliant blue flame, the resulting gas (sulphur dioxide) serving in this case to burst the copper case and make the conflagration visible.

The Decoy

THE plane began to descend, and with tightening about the heart I realized the moment was at hand. Below us lay the landing field, and with a tingle of joy I recognized the slender body of the *Comet*, apparently unharmed. But as we drew closer I saw a swarm of Ganymedians surrounding it, armed with blow-guns and knives. Planes patrolled the air above the field, cruising slowly about. I realized that, poorly armed as were the guards, our five men would stand no show against them in a direct attack; we must resort to strategy.

The commander of the plane evidently thought likewise, for he headed up toward the clouds. A council of war was hastily called, and I made a suggestion.

"I think it best," I offered, "that you land on the outskirts of the city, and let the five of us go to the field on foot. Meanwhile you can return in the plane and draw the attention of the guards. While you engage them in battle and lead them away from the *Comet* we will dash out and take possession of it."

"Your plan is good," replied the Ganymedians. "However, we will send a few of our number with you to guide you and assist you in case you are attacked."

Accordingly, the plane turned about and soared across the city, landing in an open field near the outlying buildings. The five of us, together with an equal number of Ganymedians, disembarked and stole into the city. The streets were shrouded in semi-darkness, for while the sun had recently set on this side of the world, Jupiter was always above the horizon and his huge crescent sent a diffused light from the overcast sky. We wound our way through the narrow streets, keeping in the shadows wherever possible. The Ganymedians formed a circle around us so that our unfamiliar forms would be less likely to attract the attention of a casual observer.

At length we saw the lights of the landing field ahead of us. The plane of our rescuers was nowhere in sight as we approached, but it shortly made its appear-

ance, diving through the clouds and heading straight for the field as if to land. The planes of the guarding party rose to meet it. Swinging into formation, they soared in a body above the attacker, while from one plane and then another appeared fiery torches, which they had hurled downward in an attempt to set fire to it. The scientists' machine dodged cleverly and turned away from the field, leading the defenders away as we had planned. A large share of the ground force followed at a run, to meet and destroy the scientists should they succeed in effecting a landing, but we noted with dismay that half a hundred remained at their posts in a circle about the *Comet*.

My plan of decoying the guards away had worked once, however, and I decided to try it again. I turned to the group.

"Ernst," I said, "we must get those guards away from the machine somehow. You and Dalton take three of the Ganymedians with you; make your way around to the other side of the field and stir up some excitement. Shoot—yell—anything to attract attention; make them think there's a large party attacking. Then retreat and hide. Meanwhile we'll sneak up from behind and board the *Comet* and then pick you up." Ernst nodded his agreement, and picking out three of the Ganymedians set off through the streets to circle the field, Dalton with him.

Dr. von Lichten, Lafourchette and I, together with the two remaining Ganymedians, kept our posts. For perhaps fifteen minutes the silence was broken only by the faint sounds of the distant commotion, indicating that the bulk of the Ganymedians were still pursuing the decoy plane. Then from my radio receiver came the sound of Ernst's voice, yelling like a Comanche, while the microphone brought the rapid reports of five pistols. The fifty Ganymedians about the *Comet* turned to face the noise, some advancing at a run, a few lingering. I signalled to my companions and we dashed for the center of the field. Ernst had done his work well; we were within ten paces before we were discovered. Our guns spoke in unison; four Ganymedians tumbled to the ground, while the others rushed

about in confusion. We vaulted to the top of the *Comet* and snatched open the door to the air-lock. One of our Ganymedians caught a poisoned dart in his shoulder, a flying knife cracked against my helmet, and then we were out of danger, the door closed behind us.

In my radio receivers I heard faintly the shouting voices of Ernst and Dalton, retreating. I sprang to the control-room closed the gravity-screens and set the *Comet* in motion. Ernst's voice came again: "Marland! Have you got it?"

"Yes!" I shouted.

"Come—quick!" I heard. "We're surrounded! They've got us!"

"Where are you?" I yelled.

"North side of the field, first street!" was the answer. "Hurry!"

I SWUNG northward, flying low. A roar from the sky announced the return of the enemy planes as I reached the first street beyond the limits of the field. Looking down I saw a tremendous crowd milling excitedly into the street, but I could not make out Ernst and Dalton in the semi-darkness. I dropped the *Comet* down between the buildings in the hope of scaring off the Ganymedians, but they stood their ground. I did not dare try to crush them with the machine for fear of killing my comrades at the same time. I peered vainly about, trying to locate them.

"Marland!" Dalton's voice.

"Where are you?" I shouted again.

"On the field! They've knocked Ernst out and tied me up, and they're putting us aboard a plane!"

"Coming!" I yelled, and turned the *Comet's* nose up, noting with satisfaction that the gas discharge enveloped a number of Ganymedians.

The flying field was covered with planes, some in the act of landing, others just taking off.

"Marland!" came Dalton's voice again. "We're going up!"

"Which plane?" I asked.

"I don't know how to describe it! I can't see out—it's dark in here! Try to

Fully a dozen planes were leaving the ground at that moment. I rushed for the nearest, shouting Dalton's name. His answer came, fainter. Not that one! I tried another, but with no better luck. The planes were scattering in all directions. The Ganymedians saw what I was up to and knew how slim were my chances of finding the right plane before Dalton's radio would be out of range. Desperately I tried to circle the field and round up the planes, but five of them escaped, with Dalton aboard one. His cries grew fainter, and finally faded out; I could not keep track of the speeding planes in the dim twilight.

Von Lichten and Lafourchette were at my side in the control room. I turned to them.

"We must do something quick!" I said. "We must find them and rescue them!"

"What can we do?" asked Lafourchette hopelessly. "They are lost; we cannot hope to find them. They are miles away by now, and there's no telling how far they will be carried."

"But we cannot leave them to the mercy of the Ganymedians!" I protested. "They will probably be taken to some city; let us fly over every one on the planet and try to bring our radios within hearing range."

"It would be useless," said Lafourchette. "The radios are good for half a mile—three quarters at the outside. It would take days, perhaps weeks. They will be killed before we can reach them."

"True," put in von Lichten. "And further, the Ganymedians may foresee that we will search their cities, and hide them in some forsaken spot. If we passed within half a mile of every point in the inhabited strip between the ocean and the desert, it would mean traveling a path thirty million miles long!" He shook his head. "If only the radios were more powerful—"

"Can we not make them so?" demanded Lafourchette suddenly. "The desert people are excellent workmen; perhaps they could make us a powerful set."

"No," I said. "It would take them several days at the least." Then I recalled the code-messages of the Ganymedians which

had spoken from our receivers on our first encounter with their planes.

"We can do better!" I exclaimed. "They have radios already made! We can borrow one of their planes and fly along, calling to Dalton and Ernst!" I swung the *Comet* about and rose above the clouds, seeking the plane of the scientists. After a moment I spotted it some miles away and made for it with a rush. The commander recognized us and flew to meet us; then as we drew close, he headed for the desert to return to his city. This did not suit my plans at all; it was a six hours' trip in his machine, and I must talk to him at once. I headed in front of him, trying to indicate that I wished him to land, but he evidently did not understand, for he only put on more speed. At length, in desperation, I decided to climb out on the *Comet* and attract his attention. I turned over the controls to von Lichten and entered the air-lock.

CHAPTER XVII.

We Search Through Ganymede

I was still clad in my envelope, and the magnetic shoes served to give me some extra foot-hold in spite of the slight gravity. We were traveling at a good five hundred miles an hour; it was a desperate chance, but the lives of two men hung in the balance. Fastening a rope to the air-lock door, I tied it about my waist and climbed out.

We were traveling at an altitude of many miles, and the rush of air, though terrific, was not as great as it would have been nearer the ground, for which I was thankful. I lay flat on the top of the *Comet*, clinging to my rope and waving an arm above my head. The Ganymedians finally saw me and drew near. A daring plan entered my head; the circular door opened, and the face of a Ganymedian appeared. I motioned him to come nearer. The plane settled slowly until it was a bare ten feet above, then dropped back slightly. Ten feet! On earth it would be impossible, but with the weak gravity—could I make it?

I crouched, and jumped with every ounce

of strength, arms outstretched. Somehow my hands encountered the rim of the door, I drew myself up against the drag of the whistling wind, and was safe aboard the Ganymedian plane.

In the reaction from the awful chance I had taken, I was speechless for a moment, as were the Ganymedians. The commander was waving madly. In his excitement at my jump he was trying to question me in his language! I motioned for pencil and paper, and quickly related the capture of Ernst and Dalton, the necessity of their immediate rescue, and our plan to use their radio. The scientist shook his head, and wrote:

"The instrument you call a radio passed out of favor with us some years ago. As you know, we are unable to converse directly through sounds alone, so we have devised an apparatus for projecting moving images by means of electromagnetic waves. That is the only equipment for communication aboard this plane."

A television machine! Interesting, but useless to us. I thought for a moment,

"Are not the planes of your enemies equipped with radios?" I asked.

"Yes," he replied. "They send messages by means of intermittent signals, using their code. Their instruments will not reproduce actual sounds, however."

"Nevertheless," I decided, "we may be able to use them. We must capture one of their planes at once."

"We will help as well as we can," replied the commander.

"Then let me return at once to the *Comet*," I wrote. "Give me a rope and I will drop onto it."

A metal cord was procured, and after a few breath-taking moments I was back aboard the *Comet*. I explained the situation to the others as I turned it about and headed back for the flying field.

Most of the planes had landed, but there were a few still in the air. They saw us coming and rushed out to meet us. I singled out one and cut it off from the others, threatening it with the blazing gas discharge as I circled quickly around it. The pilot recognized his helplessness, and al-

lowed himself to be shepherded away to the edge of the city. Here I forced him to land, and armed with our automatics we approached it cautiously. The scientists landed their plane on the other side, and seeing that resistance was hopeless the enemy aviator surrendered. We tied him securely and boarded his plane.

The radio apparatus was mounted back of the controls. At first glance it appeared hopelessly unfamiliar, but on examining the details of its construction we saw that the essential principles were all there. To be sure, the various parts were strange and bewildering, but we recognized the vital functions of each piece of apparatus. In its present form it would not serve to transmit our voices, but with the attachment of our microphones and receivers, and perhaps a variation here and there, it could be made to serve. We decided to transplant the apparatus intact to the *Comet*, and set to work at once.

The Ganymedians, being familiar with the construction, did the work, while I showed them how to connect it to our generators. With what tools we possessed we set it up in the *Comet* control room and tested it out. Finding that it was in working order, we took off once more and headed up above the city. Dr. von Lichten took his place at the microphone while I steered a course around the city, then off to the west. He kept up a continuous fire of talk: "Dalton! Ernst! Can you hear me? Von Lichten speaking, aboard the *Comet*. Answer if you can hear me." A few seconds wait. "Dalton! Can you hear me?—" I sent the flyer hurtling along at a terrific pace above the inhabited strip, zig-zagging so as to come within a hundred miles or so of every part.

AT the end of half an hour we had heard no response. We had covered nearly four hundred miles; in the direction I thought the planes might have taken. They had two hours' start on us, but could not have covered more than that distance, judging from their speed. Evidently they had not gone this way. I circled about and headed back, passing to the north of the

city, toward the desert. Now and again we flashed over a small settlement, or crossed a river or lake, but the country was for the most part bare. Lafourchette replaced Dr. von Lichten at the microphone and took up the endless monologue. Still we rushed on, heading east now, zig-zagging again. We seemed to be entering a range of low mountains; here and there signs of long-past volcanic activity appeared. Lafourchette was waxing eloquent: "Dalton Ernst! Where are you? Answer—it is I, Lafourchette! Fear not, *mes amis*, we will rescue you! Speak only a word and we shall come on swift wings! Ah, *mes enfants*, can you not hear?" Half an hour more. If we did not reach them quickly the Ganymedians would have time to land. With their cold-blooded contempt for life and their devilish ingenuity—I shuddered to think of the fate of my comrades.

Lafourchette stopped short in the midst of his impassioned entreaties, then uttered a joyous shout.

"I hear him! Dalton has answered!"

"Ask him where he is?" I exclaimed.

"He doesn't know!" replied Lafourchette after a moment. "They have been taken out of the plane and are imprisoned in a stone building on the side of a mountain. He says a cloud of smoke is visible through the window to the southwest of him; he thinks they may be on the north-east slope of a volcano!"

"North-east slope of a volcano," I repeated. "That should be visible for quite a distance. Keep in touch with him, Lafourchette, and tell me whether his voice grows louder or fainter. Dr. von Lichten, look out for the smoke cloud."

Lafourchette kept up his conversation with Dalton.

"Ernst has recovered consciousness," he reported, "but is too weak to talk yet. He is not seriously injured, however. Dalton's voice is louder," he added. I looked out through the periscope, but could see no smoke. We were definitely over a mountain range now, the peaks of some extending a mile or two above the ground. I noted a mighty snow-capped patriarch to the north

of us, reaching almost to the clouds. I pulled the *Comet's* nose up a bit in order to get a better view of the landscape. Still no smoke was visible.

"Wait!" cried Lafourchette. "Dalton's voice is growing fainter!"

"We must have passed to one side of him," I said, swinging about. We dashed back over our course, coming abreast of the high peak I had noted.

"It is loudest here," said Lafourchette.

"He is north or south of here then," I said. "We shall see which. Listen closely." I swung south, toward the ocean, but Lafourchette quickly called. "Not this way!" I swung about once more, and headed for the snow-capped mountain. It could not be long, now. I put on an extra burst of speed, and Lafourchette reported, "Louder." Still no smoke was visible. I wondered what range our radio outfit had.

We could see easily fifty miles ahead.

At the Volcano's Edge!

THE *Comet* sped over the big mountain's snowy tip, a few hundred feet below the lowest clouds. A vast panorama lay ahead of us, wild, rugged, and uninhabited. We were nearing the northermost point on the globe, yet there was no evidence of ice and snow such as we might expect. The internal heat of the satellite kept its surface at a nearly even temperature throughout, and the polar region was much like the rest of it.

Far ahead, on the dim horizon, lay a murky patch of haze, wavering, rising, falling. Even as I realized what it was, von Lichten shouted:

"The volcano! Dead ahead!"

The *Comet* quivered as I speeded up another notch. The terrific wind-pressure made it hard to handle, and we skipped about through little air-pockets. A tiny flying creature tried to cross our path and was impaled on the ship's pointed nose. The volcano drew closer, its murky umbrella of smoke stretching out toward us. I slackened speed now. "North-east slope," I muttered, dropping down.

"Hurry!" exclaimed Lafourchette sud-

denly. "The Ganymedians are coming for Dalton and Ernst!"

The *Comet* was close to the ground now. I spied the planes of the Ganymedians near a small stone building, half-way up the slope, and drew up to it, letting the landing skids plow the ground without bothering to reverse and stop. Automatics in hand, we jumped out as a crowd of Ganymedians left the building, starting up the slope, with our comrades in their midst. Seeing that they were pursued they broke into a run, dragging Ernst and Dalton with them. I tried to take aim for a shot, but they were a good hundred yards ahead, and at that distance there was grave danger of hitting one of our party. I sprinted madly, Lafourchette and von Lichten at my heels, bounding in long steps up the slope. I saw only too clearly their diabolical intent—to push the earth-men into the smoking crater!

We were gaining slowly, due to their difficulty in dragging our captive fellows. As the distance lessened I decided to risk a shot, when suddenly two dozen or more detached themselves from the rest and turned to meet us. I pulled up and fired into their midst as did the Doctor and Lafourchette. They divided, flanking us, and closed in. I fired carefully, dropping a Ganymedian with each shot, but there were too many. We were suddenly surrounded, pinned to the ground, deprived of our guns, tied, and carried to the others. It all happened so quickly we had not had time to think. We had stepped from the frying pan into the fire!

This promised to be literally true—too true. The five of us were dragged up the slope of the volcano despite our frantic struggles. I watched with fascination the heavy pall which hung over the mountain top like a vast death-shroud, shifting, swirling, as though beckoning us to our doom. The earth trembled beneath our feet; a streak of fire shot up from the crater's rim. A fine hail of volcanic stone rained about us, covering the ground, blackening the surroundings.

A shout of terror came from the foremost Ganymedians. I looked to see what

had alarmed them, and beheld a tiny, trickling stream of lava spilling over the edge of the crater, snaking down toward us. With one accord the Ganymedians fell to their knees, extending their arms in supplication toward the mountain-top. As if in answer, a great crack appeared in the rocky rim above us and a torrent of red hot molten lava gushed out. The Ganymedians turned and fled in utter rout, leaving us, bound, on the slope. I strained at the metal cords which fettered my arms, trying to free myself, but to no avail. The blazing stream came closer, writhing and twisting like a living tongue of fire. Desperately I struggled to rise.

"Come over here," called Ernst's voice weakly. "They didn't tie my hands; I can get you free!" I rolled over to where he lay, too weak to rise. He pulled at the knots of my bonds, and after an eternity I felt my hands come free. I loosened the cord about my feet, then I dragged Ernst to the others, and between us we managed to free them before the smoking lava reached us. I picked up Ernst like a sack of flour, light as he was, and fled down the hill, bounding like a mountain goat. I have no doubt that we five broke all existing records for rapid travel afoot in the quarter-mile between us and the *Comet*. We scrambled aboard as the stream of lava licked against the stone house, and shot into the air a few seconds later.

Up above the clouds we rose, blessing Mother Nature for our second escape from death by fire. We climbed into the high, thin air where no Ganymedian plane could penetrate, and set off northward toward the city in the desert. I say north, yet that is incorrect; there was no north from that spot. Looking behind us we could see Jupiter's half-illuminated face, bisected by the horizon. Ahead, directly opposite him, the sun's pale rays divided on the sky-line. The plane of the ecliptic, dotted here and there with the tiny lights of the outer planets, lay about us, its whole circle visible on the horizon. We were over Ganymede's north pole, marked almost exactly by the erupting volcano.

DR. von Lichten assumed a professional attitude as soon as we were above the ground. He examined the lump on the back of Ernst's neck, where the butt of a Ganymedian gun had struck him just below his helmet. His envelope had lessened the stroke somewhat, and beyond some slight dizziness, he felt no ill effects. A dose of stimulant put him on his feet in short order and he quickly regained his usual cheery disposition. Lafourchette's knife scratch showed signs of infection, causing the Doctor some concern. The diminutive Frenchman grudgingly submitted to treatment, calling von Lichten's liberal application of antiseptic "war paint" and making light of the whole affair.

We made good time to the city in the desert and found the scientists' plane waiting for us. They congratulated us on our success in recapturing the *Comet* and planned a banquet for the morrow in honor of our safe return. Meanwhile we gratefully retired to rooms prepared for us and reveled in the blissful relaxation of sleep.

On arising we were visited by a delegation who wished to hear the details of our raid. They listened with interest to the story of Dalton and Ernst's capture and our efforts to locate them. When we mentioned the evident awe of our captors for the erupting volcano, they showed considerable amusement.

"That is but one of the superstitions of those people," they explained. "Our race has long known that the heat of our planet came from within. The ignorant ones believe that the interior of Ganymede is the home of a fiery demon, Pyros,* who rules their destinies. They make sacrifices to him from time to time, a custom which we condemned during our rule. The periodic eruption of the several volcanoes on this planet they interpret as manifestations of Pyros' displeasure. Of late the north polar volcano has been unusually active, and their two attempts to incinerate you alive indicate that they took your arrival to be the cause of its eruption."

The hour of the banquet drew near, and

*The Ganymedian name is synonymous with the finger character for "fire."

our visitors excused themselves, saying they would return shortly to escort us to the celebration. On our departure from the moon we had made no preparations for formal entertainment, and had to be satisfied with a hasty shave and change of clothes. Lafourchette exhibited a flare for gaudy raiment and blossomed out in a well-saved suit of pre-war cut, a two-inch standup collar and a brilliant necktie of many colors. A sickly green boutonniere, picked from a Ganymedian garden, added the finishing touch to a makeup which would have taken first prize at any masquerade ball.

We were escorted to the banquet hall where the leading scientists of the city were gathered. Someone with courteous foresight had prepared stools for us, while the Ganymedians, as usual, seated themselves dog-fashion in a great circle on cushions. Food was served on little individual stands placed before the diners by servants of the uneducated race, captured during battles. On our left sat the Ganymedians with whom we had conversed frequently, and next to him a venerable old fellow who presided over the affair. He had recently celebrated his thousandth* sunset, and held in his domed cranium the wisdom of the ages. During the progress of the dinner he made a long speech in which, according to the interpretation of our friend, he discoursed at length of our daring accomplishments in traversing four hundred million miles of interplanetary space and defeating unaided a host of their enemies. At each pause in his finger gymnastics the listeners threw their arms in the air in silent applause and turned admiring glances in our direction. When at length some sort of reply was evidently expected of us, I requested our interpreter to announce that the possibility of the trip and the credit for it belonged to the men who had remained behind—Dr. Forscher, Wiley, Langley and Quaile. In reply the orator declared that credit would be given them for their theories, but to those who had taken the risks belonged the glory.

*"Thousandth" is in Ganymedian notation. This figure is $12 \times 12 \times 12$, or 1728 Ganymedian days, each $7 \frac{1}{6}$ Terrestrial days long. His age, therefore, was about 34 years.

CHAPTER XVIII.

The Return!

AFTER the meal we were informed that for our special benefit there would be a moving picture of life and happenings on Ganymede. At one end of the hall a curtain was withdrawn, exposing a translucent screen. It seemed that the apparatus for projecting pictures was an elaboration of their television machines. There was the usual receiving apparatus, except that instead of being connected to an antenna which picked electromagnetic waves out of the ether, the impulses were recorded on a fine tape and reproduced by a needle which followed its markings.

The scenes which flashed on the screen dealt for the most part with industrial operations in and around the great city. There were views of the great plants where nitrogen was removed from the air and "fixed" for use in fertilizing the sterile desert. Others showed the water works, where hydrogen was recovered from decaying plants, from the air, and every other conceivable source, burned in oxygen, and the resulting steam condensed and doled out through pipes to the houses of the city, the farms, and other places where it was required. It was one of the most expensive substances in the economics of this city of scientists, which accounted in large measure for their desire to return to the ocean-front. In another view we saw the government's great nursery, where the eggs were hatched and the young reared, given their elementary training, and fitted for life on reaching maturity.

Their period of growth was about ten years, at which age they were considered adults and expected to take part in the maintenance of their civilization. Considering the short span of their life we were amazed to realize how thorough was their education and how rapid their progress. The facts and principles which require eight years of elementary schooling in America were absorbed by these youngsters in two or three. From that point each individual specialized in some line for which he was considered suitable, and his intensive train-

ing enabled him to reach the mental caliber of our average technical school graduate before his three hundred and fiftieth* sunset.

Finally the banquet adjourned, and in company with our interpreter and a few others we returned to our quarters. The scientists were anxious to discuss the subject which had been broached when they rescued us and brought us there, namely, the enlistment of aid from mankind in their war to regain possession of the lands held by their enemies. As usual, the interview was carried on in the simplified English we had taught them. The interpreter came to the point without formalities.

"You have seen pictures of the way, in which we struggle for existence," he wrote. "Our supply of water is expensive and inadequate, and the food is not much better. Our race is badly nourished, and in the few generations we have existed in the desert there are signs of physical deterioration. We ask help—armies and equipment. You five earth-men are strong, intelligent and resourceful. You have given us the secret of one powerful weapon, and you tell us there are others. With a few thousand beings like you, armed as you are, it would be a simple matter to put the enemy to rout. Give us this aid—enlist a force of men and arm them; teach us to build ships like that in which you came, and we will be forever indebted to you. In return we can show you the construction of our television apparatus, our high-powered airplanes, and many other devices of which we know. Our two races can exchange ambassadors and maintain communication. We can pool our scientific knowledge, and together rule the universe!"

Acting as spokesman for the party, I replied: "We realize your situation fully, and so far as it is within our power we will help you. However, you must understand that we came to Ganymede, not as the accredited representatives of a planet, but as five scientists exploring the solar system. We are backed, at best, by a colony of researchers numbering but a few hundred members, under the direction of the man who has the

*Ganymedian; somewhat less than 7 years.

sole right to say who shall copy our machine. The implements of war known to us we will describe to you willingly, and we will promise to inform the people of earth of your request for assistance; but we must confer with Dr. Forscher, our superior, before giving you the secret of the *Comet*."

After a short discussion of my message by our interviewers, the interpreter wrote:

"We receive your promise with pleasure, and will respect your wishes. We ask, further, only that you make haste to send us what aid you can. Meanwhile, during the remainder of your stay, this city is yours to inspect, and our people at your command." With which announcement the scientists arose and took their leave.

MY first thought was to inspect the *Comet*. I went over it from stem to stern, testing the apparatus and checking up on our supplies. I found to my chagrin that we had unwittingly left the machinery for renewing the air running during our stay on the satellite, with the result that it now held barely enough chemicals for our return trip. On making inquiries I discovered that the mineral salts necessary for the manufacture of potassium chlorate, from which our oxygen was derived, lay close to the ocean, and we were unable to obtain them. It was therefore imperative that we start back as soon as possible.

We had spent altogether about eight terrestrial weeks among this strange race. The satellite was past its nearest approach to the earth, and would not reach that point again for another five days, but the additional distance would mean only a few hours' more travel. Furthermore, the earth and moon had reached their least distance from Jupiter before our start, and each day's delay increased the intervening space. Accordingly we bade the Ganymedian scientists a hasty farewell, climbed aboard, and turned our nose skyward. I picked up the earth in the periscope and turned on the full force of acceleration. This time our course angled away from Jupiter, and we did not experience the annoying disturbance of his magnetic field. Soon the giant planet with his system of attendants was dropping

away behind us as we flashed along through the ether in our little shell, cut off from the entire universe.

Five days ticked by on our clocks. The monotony of the trip held its sway over the group, causing us to cast about for diversion. Dalton suggested that we draw up a map of Ganymede from the data we had procured, indicating our route on it. The idea was adopted at once. I was elected to do the drafting, the others contributing suggestions as the work went along. The final result was sketchy, due to our meager knowledge of the country around the ocean, but it would serve to give Dr. Forscher and his staff an idea of the physical characteristics of the little world. We discussed plans for equipping an expedition to take part in the wars of Ganymede, and day-dreamed over the future relations of the two worlds, some of us imagining ourselves as diplomatic representatives to their government in future years.

On the twelfth day a shadow crept over our high spirits. Lafourchette, coming off duty in the pilot hours, complained that he felt poorly. Dr. von Lichten's examination disclosed the fact that his knife scratch was badly infected. The doctor ordered him to bed at once and treated the reddened sore.

At the next meal he felt no better, refusing food. Dr. von Lichten seemed worried, and at his suggestion we withdrew to the engine room, leaving Lafourchette to sleep quietly. The doctor made no response to our questions, busying himself with his medicine case and presently joining Lafourchette. His elaborate precautions against unknown bacteria in the atmosphere of Ganymede came to my mind. Could it be that the little Frenchman had contracted a strange malady, peculiar to that world? The idea was not comforting. We had faced death at the hands of our captors, incineration in the crater of the volcano, or even the risk of annihilation by a wandering meteoric rock, without a qualm. These were tangible things, to be foreseen and understood. But the torturing anguish of an unknown disease was enough to sicken the strongest heart.

Presently von Lichten appeared in the doorway, his face grave.

"What is it?" was asked in chorus.

"I do not know," replied the doctor with a gesture of helplessness. "The infection has spread through his whole system, inflaming the muscles, which cramp his whole body. In spite of my efforts he grows rapidly worse. So far his heart has not been touched. If it should be—"

"Can't we do something?" I demanded. "The disease must be known to the Gany-medians; why not head about and take him back?"

"It would be useless," returned the doctor. "We have been on our way nearly two weeks. His malady is progressing very rapidly. If he is to be saved through medical aid, it must be at once. In forty-eight hours it will be too late."

"Is it as serious as that?" asked Dalton in a whisper.

"I fear so. He is very weak; his breathing is shallow and rapid. With a strong man it might be different. We can only hope for the best. Meanwhile," significantly, "no one save myself must go near him. You will be safer in the control room."

"But what of your own risk?" demanded Ernst.

"That is the physician's lot," said the doctor shortly. "I shall take every precaution."

He reentered the living quarters, leaving us to face one another in despair. From his conservative habits of speech I knew he had not exaggerated the seriousness of Lafourchette's condition.

A Tragedy in Space

THE door reopened. Dr. von Lichten was a haggard ghost of his usual self. His face was drawn and gray; his bloodshot eyes stared from hollowed pits surmounting blotchy circles which bespoke the ordeal he had passed through. He spread his hands in a gesture of finality.

"Gone?" whispered Ernst. The doctor nodded.

"Fifteen minutes ago. It was hopeless."

"May we see him?" asked Dalton.

"I think not. He is—unrecognizable."

There was a moment of ghastly silence, while the clock ticks jarred on our ears like pistol shots. Von Lichten pulled himself together with a visible effort.

"We must get the body out," he said.

"Overboard?" protested Dalton. "Surely he deserves a decent burial on earth!"

"The risk of contagion is too great," said von Lichten. "He understood."

We stood in the air lock, with its outer door opened to the emptiness beyond, our envelopes hiding the emotions which filled the four of us. As we watched a shapeless bundle drift slowly out of sight, the marvelous courage of the dead man commanded our utmost respect. Lying there in the darkness of the *Comet's* close quarters, he had known that the life he loved and enjoyed had but a few minutes to run; that he stood on the brink of a precipice which was crumbling, even as he spoke, to plunge him into the silent, blank, timeless eternity of non-existence. Yet he had faced the thought of his body being tumbled into nothingness, to wander through the solar system, drifting on, and on—

Back in the engine room Dr. von Lichten examined each of us for the slightest sign of infection but found none. To keep busy, we set about a general overhauling of the *Comet*. We checked over the apparatus carefully and cleaned and polished the machine throughout. Working like beavers, we asked only to be busy.

At the end of thirty-four days we were within three million miles of the earth and its satellite. As the hour approached when we would turn on the power for our final stop, I fancied the colony on the moon, preparing for our return. In all probability Quaile would be sweeping the skies in the direction of Jupiter with the hundred foot telescope, seeking the tiny blue-yellow streak in his eye-piece which would herald our return.

The four of us awaited our arrival no less anxiously than the members of the colony. Our supplies were nearly gone, and the oxygen would not last over forty-eight hours. We should reach the moon in twenty-two, and be safe in the colony in two

more; twenty-four hours at the outside before we were to see the faces of our colleagues.

We stood alternate watches in pairs as we neared our destination. The moon was not yet full, but it was past a line from our vessel to the earth, since the latter was two months advanced beyond conjunction with Jupiter. The direction of our flight carried us toward the center of the moon's disc, a tiny circle of blackness among the stars.

Half a million miles out, somewhat less than ten hours before our scheduled landing, Ernst and I sat before the instrument board. I noted with a start that one of the generators was running hot, and hurried to investigate. The insulation of the armature was giving way under the strain of many hours' running at full load. I recalled the sight of the tractor which had burnt out its generators and flashed away into the sky, a mass of white hot steel. I must cool off the driver at once; but to do so the electrical apparatus must carry an extra load for a moment.

Would they stand it? Obviously better now than later. I stepped up the rheostat a notch. Their whine rose half a tone, then fell in slow diminuendo. I pushed the controller another notch. The roaring gas grew quieter, like the baffled voice of a dying tempest. In another second it would be under control. One more notch. The overheated generator resigned its task in a blinding flash. Automatically the others took up its load, groaning under the increased flow of current. But they carried it; the driver cooled, easing the strain on the electrical apparatus. I drew a breath of relief.

THE burned-out generator had filled the *Comet* with smoke, bringing the others of the party at a run. In answer to their excited questions, I explained our situation. We had three generators left to do the work of four; our deceleration must be cut to three-fourths of normal. After covering the remaining half-million miles to the moon we would still be speeding along at a pace sufficient to outstrip the fastest bullet. It was out of the question to land here; we

must steer past and continue slowly down until we could return.

But was there time? The vital supplies of oxygen were perilously low; our margin of safety was too small. I peered out of the periscope toward our fast approaching satellite, noticeably larger now. A quarter of a million miles further on, gleaming cheerfully in the sunlight, lay the only way out of our difficulties—the earth. We could dive into the welcoming blanket of its atmosphere, let it check our fall, and coast to the ground where we chose, safe and among friends. At the City College our burned out generator could be repaired and our oxygen tanks recharged. Then we could return to the moon at our leisure. The *Comet's* flaming tail would announce our safety to Dr. Forscher's colony, and from our velocity and direction, an astronomer of Quaile's caliber could easily compute our destination. They would know that we had sufficient reason for not landing on the moon, and would expect our return in good time.

Meanwhile, a question remains. What of our promise to interest the earth in sending aid to the Ganymedian scientists? I cannot visualize the governments of Europe and America lending ear to such a proposal, nor would I advocate detailing their armies. The majority of mankind is opposed to interfering in affairs which do not concern us; and to send troops against their will hundreds of millions of miles from their homes would be a colossal injustice.

Nevertheless, I am giving this message to the world in the hope that it will be read by some in whom the spirit of the pioneers may linger. I have spared no details of our trip and the discoveries which made it possible, so that my readers may understand the situation fully. If they wish to see the scientists of Ganymede restored to control of their planet, they may lend a hand in putting them there.

The prospect is at once alluring and terrifying. They will find new and exhilarating sensations in striding as though in Seven League Boots, across hills and valleys covered with plants and animals which might have materialized from the smoke of an

opium pipe. They will behold wonders of the starry heavens such as are never seen from the earth. But they will meet with the hatred of four-legged foes possessed of human intelligence and inhuman fiendishness, and they must beware of the attacks of microscopic enemies.

But I do not wish to act as a recruiting officer. Let those whose love of adventure

surpasses their fear of the unknown decide the matter, each for himself. They may find me among them—I cannot tell as yet. Perhaps Dr. Forscher has other plans for me.

As I write these concluding lines, the *Comet* hovers above the City College. When you read them, Dalton, Ernst, Dr. von Lichten and I will be on our way back to the outpost on the moon.

THE END.

The Sleeping War

(Continued from Page 999)

Uncle, let me introduce Mr. Wand Foo, the owner of the Resica Falls property. The place is for sale, and the price is low, and I have half a notion you could buy it."

The East Stroudsburg philanthropist looked at the Oriental in a very interested manner.

"You have him all tied up, Abe?"

"Sure. He has a habit of arguing, and I want to be sure that I always come out on top—of the argument."

* * *

The President of the United States was closeted with two of the greatest physicians in America. They had come at his request to tell him the latest developments in the Philadelphia epidemic. To their chagrin, they were forced to admit that so far both the cause and the cure of the disease were unknown to them. The sleepers were still asleep and the weaker of them had wasted away; even the stoutest of them would soon die of malnutrition.

In came the private secretary. There were whispered conferences. At last the President yielded, and the secretary left the room, to return instantly followed by the Chief of the Secret Service, a weary looking detective and, between them, a Chinaman in soiled clothes securely tied in every possible direction.

"Mr. President," began the Chief. "This is Mr. Abe Summers, one of our men, and

he has a story to tell you about this Chinaman. I thought you would be interested."

Summers told the tale from start to finish. Parts he glossed over and he never did explain why the Chinaman could not walk. He ended by placing a bottle of the sleep producing drug on the table, and alongside he placed the bottle of little tablets and several ten cubic centimeter syringes filled with the sodium bicarbonate solution.

When he finished, a physician sighed:

"I wish we had thought of that. It sounds plausible. The story explains why certain portions of the Philadelphia community were not affected like other parts. Some of the reservoirs are filled from the Schuylkill instead of from the Delaware. With the drugs in our hands, we should have no trouble in identifying them, and then it is only a question of time before we can inject the sleepers. Those who are not too far gone can still be saved. The country owes you a vote of thanks, Mr. Summers."

"You can pay me best by keeping out of it. I just did what I was ordered by the Chief to do. But there are two things I want to do. I like the Resica Falls property, and if I can be made owner of it in some way, it will please me immensely; and then I have been carting Mr. Wand Foo around a long time, and I wish some one would take him off my hands. He needs hospital care and after that he should be kept safe. He is really not a pleasant man to have loose."

THE END

A Flight Into Time

(Continued from Page 957)

"If you'll time us please, sir, by your watch, to get it exact—" The assistant was almost apologetic.

Ted pulled out his timepiece—just two minutes before noon. Through the wires and metal tubing, Anne stretched her hand. He squeezed it hard. One minute left. The plates on the outside began to glow, not from heat, but electrically, with a strange coldness that gripped him paralyzingly.

He looked down at his watch, following the second hand around just as he had done before his other time jump. It seemed endlessly slow. Thirty—forty-five—fifty-five—fifty-six—seven—eight—

"There." He said it quite calmly. In his ears was a whirring that changed to the toot of a ferry-boat whistle as he went sprawling to the pavement. He rose and found himself grasping an arm, a prosaic 20th century arm. He had returned!

"Pardon me," he automatically impertuned the man who had collided with him—an Italian in rough clothes, apparently some sort of dock worker. But the man only hurried around the corner.

It was not until Storrs got back to his room, having decided to excuse himself later for failing our appointment, and found two of us waiting for him in considerable agitation, that he discovered that this was Tuesday, and he had, most likely, appeared to the Italian out of thin air—that there is an absolute time which will not be cheated out of so much as three days. His watch, which he had held in his hand, was apparently uninjured by the fall, but nevertheless had stopped dead at twelve exact.

A jeweller took the thing apart without finding anything wrong, and when he put it back together just as it was before it ran again. Ever since, however, it has kept execrable time, and stops on the least provocation. The double disturbance in its native element of time must somehow have paralyzed it.

Such is the story of the vision of Ted Storrs. If it had been anyone else, I

should have been inclined to doubt the narrative, in spite of its realistic semblance and detail. But give Ted a thousand years, and he could never invent half the tale, especially the way he has given it to us, bit by bit, in answer to our questions. Besides, how else explain what happened to his watch.

As I said at first, I suppose the thing could have happened only to Storrs, or another like him. If someone with scientific knowledge had made the trip, someone who could observe and learn, could understand and remember the things Ted never noticed, either the apparatus for sending him back would not have worked, or it would have been a motor truck he collided with on his return to our world. Otherwise, if he came back and reproduced things a hundred years before they were invented, they could not be invented because they would be already known, and he would have learned in the future of his miraculous discovery of them, which he did not.

And yet, for all such theory, the thing is maddening. Surely he could have brought back something, some secret which would disappear when he died, like the lost ancient arts of tempering metal, or the premature knowledge of Roger Bacon. There are so many little things he might have got. The secret of cold light, or of that fog-piercing ray, or, to ask only a little of Fate, the formula for the cosmetic that must have been used to stop the tanning at any stage.

But Storrs would not—or perhaps, in the grand scheme of things, could not—learn these or dozens of other things. He never thought of what he might bring back, even after he had learned that return was possible. He does not seem to realize the chances he missed. Instead, all he talks about when we bring up the subject, which is not often now, is "the cleanness and fineness, the beauty as well as the utility, of twenty-second century civilization."

I wonder, sometimes, if that really might not be the heart of his vision.

THE END.

The Murders on the Moonship

(Continued from Page 983)

yard, musky, reptilian? We all noticed the same odor in the fossil chamber. No wonder you lost your nerve, Major, that night! It might easily have dispatched you as well as McFee for it must have been very near you. Anyway, while you were fortifying yourself with brandy, the reptile had stolen from its hiding place, wrapped its strong body about McFee's stalwart Scottish neck, and crushed the life out of him.

"The next night everybody was safe. We suspended guard because we had caught the negro, but everybody took special care of their doors and ventilators. No doubt that precaution saved some of us. Finding no sport in the usual hunting grounds, the creature descended to the hold, where it encountered Cornelius. The negro drew his knife, and attempted to defend himself, but this further enraged the reptile and it attacked him again and again with its beak.

"Fortunately, the thing was so angry that it must have forgotten to use its tail, and so Cornelius has a remote chance of living."

"Well, that's all right, but there are two little points. How did Dr. Fouchard's ring, and Jackie Hilliard's handkerchief go missing?"

Galloway laughed. "Simple accidents: if this was fiction, they would prove excellent red herrings!"

"But there's one thing puzzles me yet, Professor," I could not help saying, "What killed Johnson's parrot?"

At this Merrivale started. "What, you mean to tell me," he said in anger, to our explanations, "that you have suppressed this most important piece of evidence from me? Had I known about this, I could have cleared the matter up in no time, and probably saved much of this expenditure of life. Obviously the parrot was killed by the brute. It settled on the cage, and when it couldn't reach the bird with its long beak, it inserted the tail between the bars of the cage and poisoned the parrot."

"I am sorry to destroy your last remaining piece of deduction, Marshal Merrivale," put in the professor dryly. "But I made an autopsy of the parrot, before we threw the body overboard, and it was perfectly clear the blessed thing died of old age, aggravated by the atmosphere of the moonship!"

* * * *

Oh, Cornelius, did he recover? Rather, he's my staunch bodyguard now, and he and I have been on many a hazardous exploration trip since, but;—you can take it from me, if old Galloway wants to hunt missing links again, he hunts 'em alone, as far as I am concerned.

THE END.

The World Without

(Continued from Page 1009)

be detached in a moment was the single remaining oxygen cylinder—heavy because it was nearly full of liquid oxygen. Hastily he unfastened it and flung it with all his strength at forty-five degrees downwards, away from the crest of the tooth. The impetus was not great, for his mass was much more than that of the cylinder, but owing again to the slight gravity, it was enough.

Klington's straining fingers were brought just within reach of the edge, and he swung himself on to the flat surface.

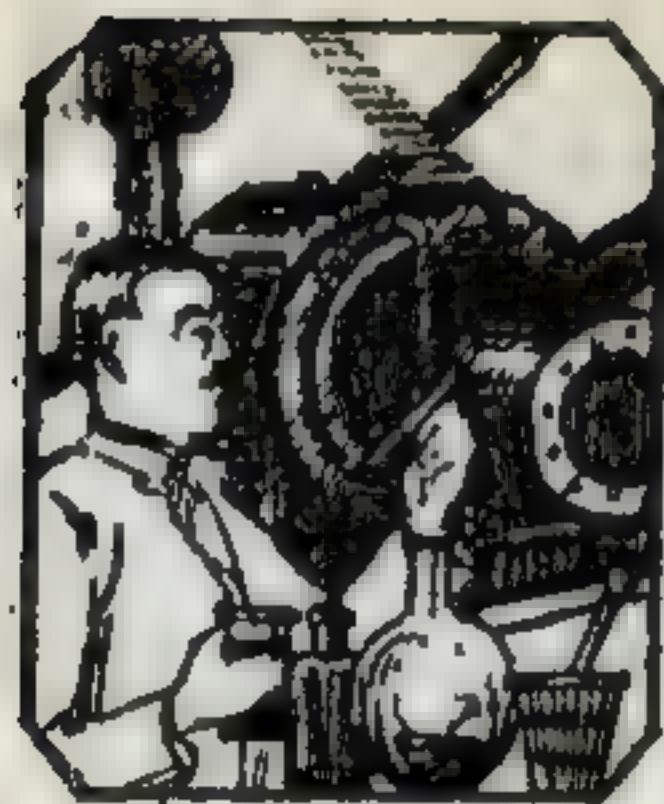
Staggering to his feet, he looked round

for the ladder, and jumped. The lack of oxygen was already telling. He swayed. The body cannot remain alive for more than three minutes without oxygen, and his lungs were clamouring for the fluid. He gathered himself together and leaped again, with a growing oppression upon his chest.

His hand just grasped the lowest rung! He was saved!

With slow, weary steps, gasping for breath, Klinton painfully dragged his body up the ladder, and ascended into the kindly world of men.

THE END



Science Questions and Answers



THIS department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical, also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

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These nationally-known educators pass upon the scientific principles of all stories.

The Sun and Its Energy

Editor Science Questions and Answers:

If, as scientists claim, space is a vacuum, or ab-
sence of air, how then does the sun burn? Has it
an atmosphere? And if so, how is it that it has not
been exhausted in these millions and millions of years
that it has been burning?

In how many years will the sun be exhausted, and
how much mass does it lose each year?

Gordon Christensen,
2454 Farwell Ave.,
Chicago, Ill.

(Heat does not come simply from "burning" in the
sense of uniting with oxygen. The heating of an
electric wire to incandescence, for example, as found
in electric lamps has nothing to do with that kind of
burning; in fact, the globe must be carefully exhausted
of air before it is sealed. Heat is created in many
ways, all by the transformation of one kind of en-
ergy into heat energy. A meteor striking our at-
mosphere is burned up, yet no oxygen or air is used
in the process. The burning up is caused by friction,
the friction of the rapid passage of the meteor
through the atmosphere.

Scientists assume that the primary heat of the sun
was obtained by the condensation of its mass, the
terrific pressure accompanying this contraction caus-
ing the gases to flame into incandescence, and the
continued condensation keeping the mass at incan-
descence. According to one authority a contraction
of only 330 feet in the solar diameter each year
would be sufficient to account for its radiation of
heat.

But recent authorities have stated that such contrac-
tion continued over millions and millions of years

would inevitably have shrunk our sun much more than
it has. The present explanation is that within the
solar interior, matter is being broken down and re-
built, and in the process atomic energy is being re-
leased in the form of radiant energy, heat, light,
ultra-violet light, cosmic rays, etc. Naturally the
enormous stores of energy released by even small
quantities of disintegrated and rebuilt matter would
explain how the sun kept burning as it has for tril-
lions of years. According to Eddington the sun is
losing 120 billion tons of its mass each year which
is the source of this transformed energy. Of this
energy the earth receives one two-billionth. The sun
can keep on as it has for some fifteen billion years
without serious danger.—Editor.)

Escaping Gravitation

Editor Science Questions and Answers:

1. Of what use are the Cosmic rays and how are
they produced?

2. Do light and gravity travel at the same speed?
If so, would an article traveling at a speed slightly
faster than light escape the influence of gravity?

Clyde Norton,
Engadine, Mich.

(1. Cosmic rays are believed to be produced in
distant nebulae, where matter is subject to such gi-
gantic pressures and temperatures in the birth throes
of great worlds (the temperatures reaching two tril-
lion degrees centigrade) that the very electrons and
protons themselves are both destroyed and rebuilt.
In these cosmic upheavals one element is changed
into another and energy is frequently given out in
the process. This energy is in the form of highly

(Continued on Page 1042)

penetrating radiation which we call cosmic rays. The only possible use found for them so far is the electroscope of Millikan. He uses a device which can test the intensity of cosmic rays on the earth's surface at any moment. And since this intensity varies with the amount of atmosphere above the instrument (the atmosphere allows more or less of them to penetrate through at varying times) he can get an index of the shifting of the atmosphere and so of possible weather conditions. It is suggested that cosmic rays might also be harnessed as power, or used to transmute elements for us, but as yet these ideas are still in a very speculative stage.

2. We have never been able to determine the speed of gravitation. If it is a form of electromagnetic energy as Einstein postulated, then it should travel at approximately the speed of light. It is believed also that its speed is infinite, that it acts instantaneously. In any case an object having mass and traveling at the speed of light, would find by the Einstein principle its mass had become infinite, and therefore its kinetic energy would be infinite. It would be, by that virtue, beyond the power of any ordinary heavenly body to attract it. Velocities greater than that of light are by the Einsteinian principles impossible, for the length of the body in the direction of motion would become less than zero—it would have a negative length.—Editor.)

are, in order to take advantage of the shifting of the wind.

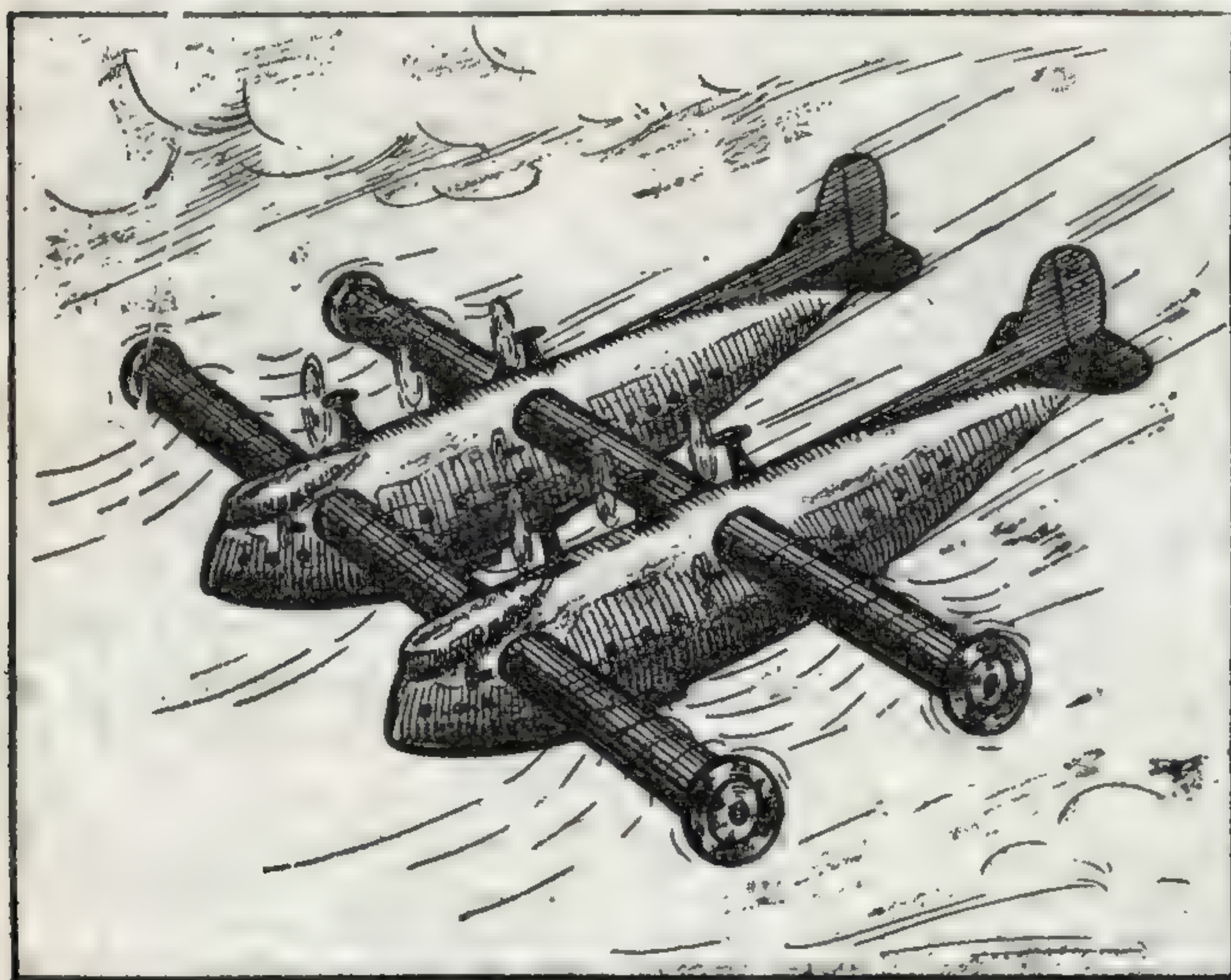
The same principle has been used on airplanes to support them without wings (as shown in the illustration). Propellers carry the craft forward through the air. The air rushes toward the two rotating cylinders. If the cylinders are rotated clockwise, as seen from our view, there will be a diminution of air pressure above them and an increase below. These two forces will act to support the plane. The scientific principle outlined here is called the "Magnus effect."—Editor.

Our Moving Sun

Editor Science Questions and Answers:

For a number of days a group of my friends and myself have been discussing an astronomical question which has progressed into quite a debate. I am writing to you in the hope that you may find time to answer the following question. If you find it of sufficient general interest you may publish it in your splendid magazine *WONDER STORIES*. I would consider it a great compliment.

I would be indebted to you for a prompt answer as I fear our group discussion will soon progress to



The Flettner Rotor-Ship

Editor Science Questions and Answers:

I recently engaged in a fruitless argument concerning the method of propulsion used by Dr. Flettner in his rotor ship, the *Baden-Baden*. It was my contention that the vacuum caused by the rotating towers was the only force used but my opponents claimed that the power from the wind was used to turn an ordinary propeller. Who is right?

F. J. MacCauley,
Riverhead, N. Y.

(Neither of you is exactly right. The ship operated in the following manner. The two towers, which were only upright cylinders of metal, were rotated by auxiliary power in the ship. The ship was turned so that it was broadside to the wind. The rotation of the towers caused the air about it to rotate with it. Now on one side of the towers the rotating air moved in the same direction as the wind and there was a diminution of pressure, which caused a partial vacuum. On the other side the rotation of the air opposed the direction of the wind and the pressure increased. Now the cylinders were rotated so that the vacuum was caused at the front of the cylinders, and the augmented pressure in back. With these two forces the ship was pushed forward. Naturally the wind was necessary for the propulsion, and the ship had occasionally to be turned as the sails of a boat

Illustration of an airplane which is sustained in the air by the "Magnus effect". The rotor cylinders revolve in a clockwise direction, which causes a current of air to circle with the rotors in that direction. Due to the motion of the plane, there is a current of air from front to rear. By these two effects, the pressure of air above the rotors is reduced and that below is increased. The net effect is to get a sustaining force to hold up the rotors and, therefore, the plane. Used horizontally, instead of vertically, this "Magnus effect" propels the Flettner rotor ship. Courtesy *Aviation Mechanicals*.

the point of blows unless the question is satisfactorily settled.

We know that the earth is hurtling through space in its orbit, at about 18 miles per second. What we wish to know is if the sun is a stationary body or if it moves, and if so does it follow a certain orbit or is it a freely moving body in space?

H. D. Shafer, S. B.
University of Chicago, 1924
1310 Hyde Park Blvd.
Chicago, Ill

(So far as we know there is no body in space that is absolutely stationary, assuming that an absolute point of reference can be found to determine whether it is in motion or not. Certainly a stationary body would presuppose one that was at the exact center of gravity of the entire universe, or was under such a balance of forces from all other bodies in the universe that it did not move. A stationary body is under general principles an anomaly. Our earth, as part of the solar system, revolves about the sun to keep itself out of the sun's gravitational grasp. Our sun is one of the millions of suns in the galactic system known as the "Milky Way." Now just as the solar planets are attracted to each other and to the sun, so the galactic suns are attracted to each other. Evidence seems to indicate that the whole galaxy of stars which is the Milky Way is rotating about its center of gravity. And since the sun lies

(Continued on Page 1053)

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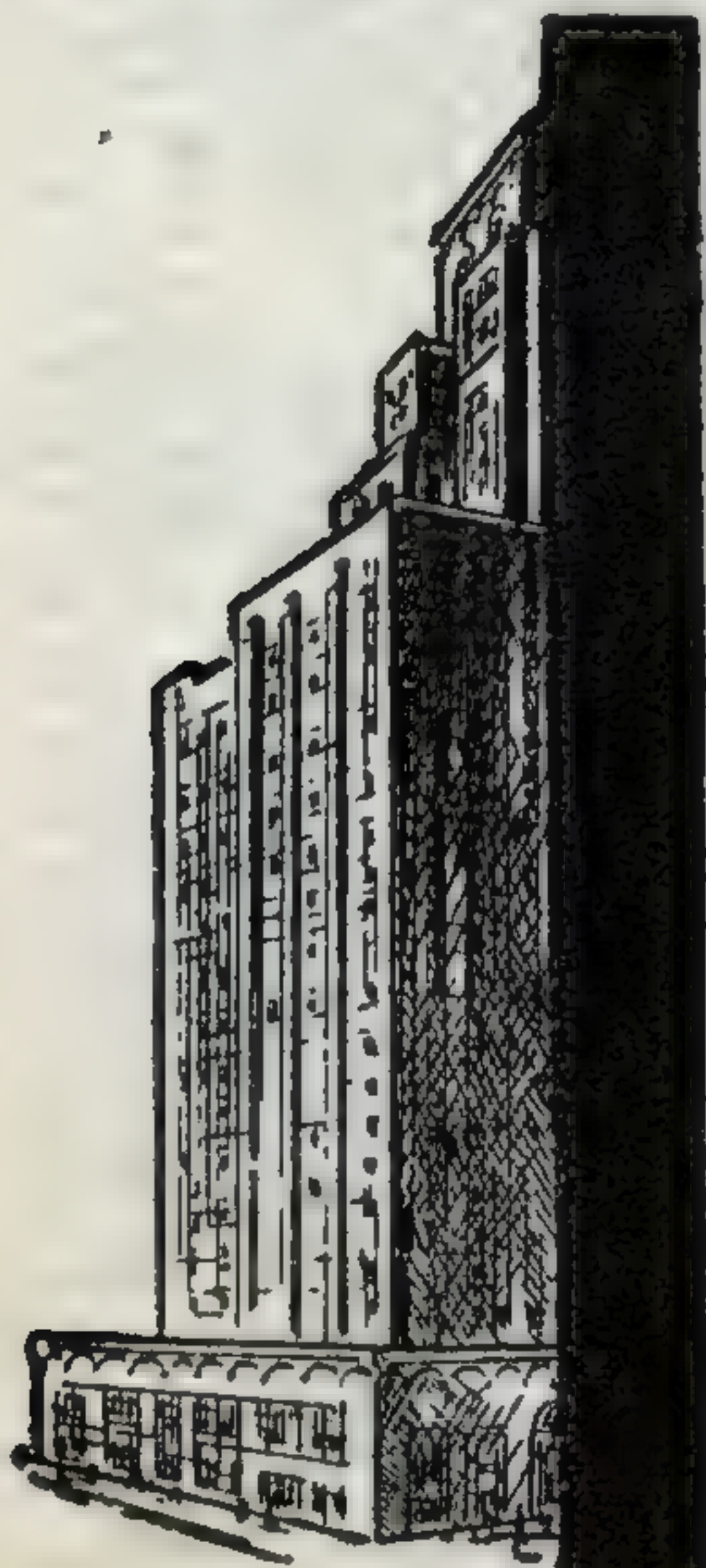
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The HOTEL

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ATLANTIC CITY, N.J.



The Reader Speaks

IN this department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good

old-fashioned brick bat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 25c in stamps to cover time and postage is remitted.

To Be the First to the Moon

Editor *WONDER STORIES*:

The reading of an article of yours in a current magazine, on space flying, stirred up an argument between me and a friend of mine. He declares no rocket has ever attained an appreciable height, whereas I am under the impression that Prof. Goddard has designed a rocket which rose 600 miles. Can you settle this for me?

Also, sir, I would be very much obliged to you if you could inform me where I could get the designs and mathematics on rockets, such as Goddard's and Von Opel's. My own calculations convince me that a rocket can be built, using liquid hydrogen and oxygen as fuel, which will fly to the moon and return, with a passenger, provided it can be designed to have at least 25% efficiency. There are several minor design problems which stop me, so far, and perhaps the consideration of other men's work will help me a lot. You see, I nourish an ambition to be the first man to fly to the moon.

Any information you can give me will be much appreciated.

L. J. Myers, M. S., Ch. E.
307 No. Vidal St.,
Sarnia, Ontario.

(The rocket shot of Professor Robert H. Goddard on July 19, 1929 ascended, to our best information, a few hundred feet. The rocket on which Dr. Goddard is spending his time now, under a grant of \$100,000 by the late Daniel Guggenheim, is expected to rise some three hundred miles for meteorological and other exploration.

There is no record to our knowledge of any rocket rising to a higher altitude than Goddard's. The experiments that have been conducted thus far have not been aimed at the attaining of altitude, but, first to demonstrate the effectiveness of the rocket principle of propulsion, and second to the finding of a means of utilizing the various types of fuel.

A letter from the German Interplanetary Society appearing in these columns in the January issue indicates the line of approach they are taking. We venture to predict that as soon as the fundamental problems of design and engineering are accomplished, altitude records will be made and broken every month.

The only published technical work of Goddard is the result of his early Clark University experiments and appears in the Smithsonian Institution Miscellaneous Collections. In this article entitled, "A Method of Reaching High Altitudes" he gives some very interesting figures on his accomplishments up to 1919.

The other major works are those of Hermann Oberth, the leading German experimenter, and Robert Esnault-Pelterie, the French engineer. Both of these men have outlined in great detail the science of space traveling, basing their conclusions on extensive mathematical calculations. The German book is entitled "Methods for Traveling through Interplanetary Space" and the French work is called "Astronautics." Neither of these has been translated.

The American Interplanetary Society, 302 West 22nd Street, New York, has been acting as a clearing house in North America for all interplanetary questions, and we suggest that Mr. Myers communicate with them. Both Goddard and Pelterie are members of this Society. The Society has as its aim the stimulation of men such as Mr. Myers who wish to make contributions to space travel, and it is now undertaking a campaign of research on the rocket that should be of great interest to those interested in the question.

A Million Million Years

Editor *WONDER STORIES*:

In the May issue of *WONDER STORIES* you published an article by Mr. Dilworth Lupton, of the First Unitarian Church of Cleveland. I take pleasure in enclosing another interesting little tribute to science which this scientist-minister has written. It should be of interest to you, especially as it deals with the word "wonder" which is the foundation of science and the basis of *WONDER STORIES*. It expresses the ideas of a man who reconciles science and religion.

Allan P. Stern,
2995 Lincoln Blvd.,
Cleveland Heights, Ohio.

[The word "wonder" has two variant meanings. It may signify either curiosity or awe. In the first sense "wonder" is the source of much of man's scientific research and achievement; in the second sense—as awe—"wonder" is one of the vital elements of religious faith and life.

Science was born in man's prehistoric past. It was born when his curiosity first impelled him to understand himself and the world in which he lived. Often curiosity took him up blind alleys of superstition and myth, but eventually it led him to the highways of knowledge and reality. Aristotle was the father of modern science. His spirit was lost to the world for nineteen centuries, but it reappeared with the coming of Copernicus only four hundred years ago.

Science—child of man's wonder—has empowered him not only to penetrate many of the mysteries of stars and atoms. Man is finally turning the light of science on himself. He has discovered his antiquity—not 6,000 years as the schoolmen taught—but at least a half million years. He has discovered the higher cortex of his brain, one-half ounce of gray matter containing nine billion separate but interacting cells. Man through science is now delving into the mysteries of his own mind and behavior, both personal and social.

Where will man's curiosity lead him? An attempt to answer that question would require the imagination of a Wells or a Jules Verne. Only four centuries of modern science lie behind us. Ahead of us?—Well, Sir James Jeans calculates man's future life on earth to be at least a million million years.

A million million years . . . that figure is impossible to grasp. But Sir James helps us with an analogy. "Consider," he says, "the length of Cleopatra's Needle as representing the age of the earth (roughly a billion years). Place on top of the Needle a penny—that denotes the time humanity existed prior to the era of civilization. On top of the penny put a postage stamp—the thickness of the stamp represents five thousand years of civilization. Then continue piling up stamps until you reach a height equivalent to the summit of Mont Blanc. There! Now you have a glimpse of the meaning of a million million years!"

What will such an unimaginable period of time mean in terms of scientific investigation and achievement? What will be discovered in the fields of physics,

(Continued on Page 1045)

THE READER SPEAKS

chemistry, psychology, the social sciences, medicine and agriculture? What new and astounding inventions will be born out of the brains of future Edisons and Pupins? Perhaps man will find through radio communication men like himself in other worlds. Perhaps he will release the gigantic power of the atom for good or ill.

For good or ill . . . in these words lies the destiny of mankind, a destiny not only in the keeping of science but even more in the keeping of religion, that other child of man's "wonder."—*Dilworth Lupton.*

(We think that Mr. Lupton's article needs no comment. The Editors are firmly in accord with his views. A future beyond all imagination is before the human race. May it be worthy and able to take advantage of it—Editor.)

It Remained for American Authors

Editor *WONDER STORIES*:

As a regular reader of science fiction magazines from the time I discovered them on the bookstalls, I write congratulating you on the high level consistently attained in your stories. H. G. Wells and Jules Verne blazed the trail and have consequently been awarded the measure of praise and admiration they deserve. But it remained for American authors (mostly, I may venture to say, previously unknown to the reading public) to earn equally well-merited encomiums by their ingenuity, skill and imagination in exploring the vast hinterland of well-nigh unlimited possibilities beyond.

It is a difficult task where so many are deserving of praiseworthy commendation to select any one or more for special mention. But please present bouquets from not only myself but friends of kindred tastes in fiction, to the following gifted authors (the term including members of the fair sex as well):

Lilith Lorraine, Edmond Hamilton, Drs. Keller and Breuer, J. Williamson, Ed Earl Repp, E. Chapelow, R. F. Starzl, S. Coblentz, H. Vincent.

I particularly like Miss Lorraine's "Into the 28th Century" and "The Brain of the Planet"

Assuring you of the continued support of my friends and myself and with best wishes for the future prosperity of your science fiction publications, I am,

A. Cole,
73 Fonthill Road,
London, N. England.

(This tribute to American authors, coming especially from a countryman of H. G. Wells is all the more appreciated. Science fiction is largely a matter of having some new viewpoint on the relationship between future science and mankind; and because there is no monopoly of ideas in the brains of any group of men we continually encourage men of imagination and literary ability to write science fiction. By this means we have been able to develop a number of first-rate authors, to the benefit of the authors and readers jointly. We are sure that Mr. Cole's words coming from across the seas are well appreciated in America.—Editor.)

Sexual Education Needed

Editor, *WONDER STORIES*:

Many readers kick about the size of the magazine, thickness of paper, size of the print, etc. but personally I believe this is a matter of the publishers and not of the public. The content of the magazine is what we should be interested in and we should confine our viewpoints and criticism to that and not to the form in which it is published.

If the publishers decide to better the form, well and good. This I note, you have been doing and it shows good judgment on your part. When the readers noted your open-minded policy of improving the magazine wherever possible they immediately took a personal interest and tried to better the form along with the content, but I was always under the impression that a readers' column was for the viewpoint of the readers on the contents of the magazine. Was I right?

Another point that I want to make is that many of the stories by your authors seem to be incomplete. That is they are devoid of the sexual problem which no doubt future races will have to contend with, as we do today.

(Continued on Page 1046)

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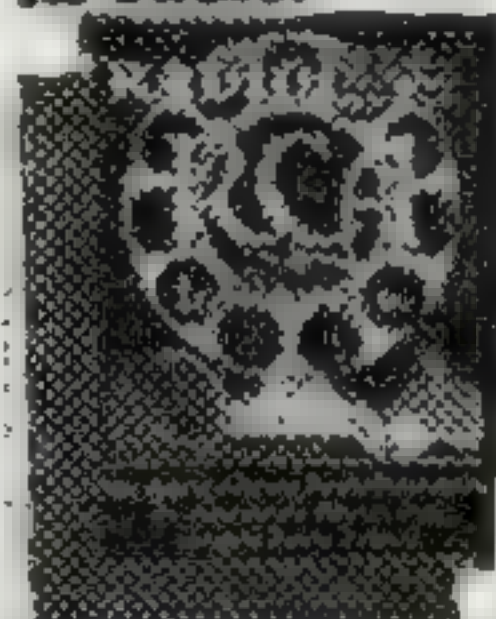
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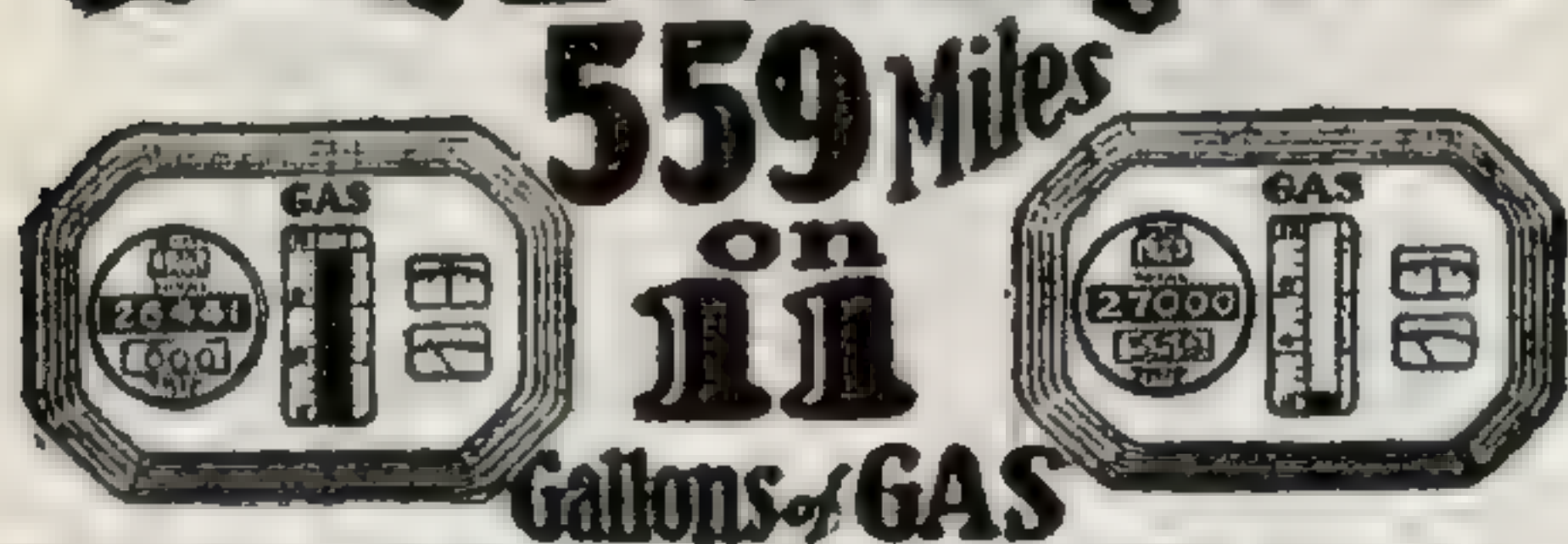
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THE READER SPEAKS

(Continued from Page 1045)

Can't your authors give us some scientific solution to this problem when they write about races of people a million years hence?

Never once has it been mentioned in all your stories; and every time I finish such a story I stop with disappointment because I feel that something was missing. Sexual education without a sensual influence is what is needed.

One thing about our human mind is that after we learn about a thing and understand it we try to apply the knowledge. So it is with a scientific sexual education and this will in time elevate man from the animal level to a higher sphere of life where he would be now if it were not for the primitive instinct born in him—namely to reproduce and carry on his race.

Science in the future will play an important part on this subject and I often wondered when reading stories of future and superior races if the authors ever thought about this at all.

Donald Hendrixson,
4127 Watterson St.,
Cincinnati, Ohio

(Mr. Hendrixson opens up a question that is not only important to us but probably of interest to every one who lives. It is true that not many authors have touched on it deeply. In the Utopias that have been written, the relation between the sexes is deemed of such importance that the State tries to regulate it by arranging eugenic unions. This of course is artificial for it takes no account of those intangible things such as natural affinity, sympathy, love and emotional compatibility. In these pictures of Utopias, the individual happiness is subordinated to the benefit to the State that is supposed to come from eugenic children.)

Russia is now trying an immense experiment in the relations between the sexes by permitting the easiest possible form of divorce—only the desire of the parties to be divorced is necessary. The point of view of one of the Russian psychologists in charge of this work is that we western nations spend too much time thinking about sex, because we are repressed and inhibited. If marriage and divorce are made easy, and people can experiment with finding a suitable mate, the Russians say, then people will not hesitate to marry early, get their sexual problems solved for the time being and then devote their energies to more important matters.

The experiment is too young to indicate whether it is successful. Perhaps it is too radical a step, it is being done too suddenly. A recent play about the new Russia called, "Red Rust" showed the upheaval that this new philosophy of sex is having on young Russians. Certainly the Russians are tampering with very explosive forces. The only thing we can do is to watch their experiment and see what it leads to.

There is no doubt that we western nations are sex-ridden and that the problems brought up by sex are always with us. Experimental marriages, free love, separate homes for the man and wife are all being tried, with no definite results. We would be foolish to expect that such a vital and age-old problem could be solved for the masses by a few young experimenters.

However it is quite difficult to put much emphasis on the deeper relations between the sexes in a science fiction story. The story then becomes too psychological.

If any of our readers have any ideas as to what future races will do about it, we will be glad to hear them. Our policy of open discussion columns means that our readers are invited to tell us just what they think of all phases of their magazine, and as far as space permits, we will print all letters from readers who have anything real to say.—Editor)

An All-Star Lineup

Editor, WONDER STORIES:

Just a word of congratulations on your entire new policy; the new size of the magazine, the policy of encouraging new authors to write for WONDER STORIES, the all-star lineup of authors that you have been giving us in the last few issues and last but not least your policy of using of stories written by authors from across the big pond. Specifically I mean Ulf Hermanson, the author of "The House In The Clouds" and Roger Wulfres who wrote "The Air-Plant Men". Mere words cannot express my admiration for these two

THE READER SPEAKS

stories. I class them with "The Ark of the Covenant" and "Hornets of Space".

My main reason for writing this letter is to inform you that there has been a change in the officer personnel of the Scienceers, the club for science fiction fans of which I have the honor to be the new secretary. We intend to continue the policy of the Scienceers which is to spread a knowledge of science and science fiction among laymen. All those wishing to join the Scienceers, or to form a branch in their home town, kindly write to your scribe whose address is given.

Herbert Smith,
Sec. Scienceers.
2791 Grand Concourse,
Bronx, N. Y.

(We print without comment, except best wishes, this letters from the Scienceers. We suggest that all young men interested in the discussion, via a club, of scientific subjects, communicate with Mr. Smith.—Editor)

A Science-Fictionist's Religion

Editor, WONDER STORIES:

It is a far cry from Singapore to New York and on down to Havana, but I have, since the advent of *WONDER STORIES*, traversed that long and glorious road, in each city and hamlet finding a copy of the magazine. Today I picked a copy of the book up on a news stand on El Prado in Havana and saw the suggestion of the editor that I say something more regarding this religious belief that I have built up around the study of science and the reading of science fiction.

I cannot cut this short and really do justice to it, but perhaps a short explanation will suffice. Yet how am I to accomplish this when I have gone just a little woozy with the fifth glass of beer during the course of the afternoon! Then, not being temperate, I suppose you think I am not sincere in this religious belief! I positively am! I have lived in the darkness of despair when everything turned literally black and my senses reeled, as if some gigantic monster had stood before me.

But after having trained the imagination to give credit to the things that are probable but not in direct evidence, I have felt that just beyond the thin veil that hangs between us and the vastness of the eternal there stands something more powerful than all the armies of the earth. In the darkness, when I almost cringed like a weakling and hoped for the peace of death, something reached out and took hold of my soul and told me that I had nothing to fear.

I have gone the pace of the wastrel fool and have made fairly good in business, only to lose out again and have to start all over. And never once in my life, in any port in this world, even when I saw my last five-cent piece go across the bar for a glass of beer did I have to worry because I realized that this infinite intelligence that stands just beyond the veil and looks across is at our service.

This thing cannot be truly understood without the training that science and science fiction gives us. It takes imagination to perceive a real God, I think. The unimaginative accepts what others hand down to him, the orthodox, the second-handed ravings of fanaticism. But one who sees for himself cannot be mistaken, at least after a few trials. And I'll try my deity out before accepting it just as I would prove anything else before accepting it. When I am trying to get over should have several pages at least, but perhaps this will do: After sounding out everything, with the aid of science fiction and science, after looking at what is and what is probable, (and looking for what is not) I realize the gigantic mystery that life is! Also, I arrive at the conclusion that it is so deep a mystery that we cannot hope to solve it.

It is too gigantic for words. We are not capable of knowing more than our highest intelligence tells us. So we forget the problem of mystery and realize that we are not supposed to know what it is all about. We stop believing in Santa Claus and accept the whole as a mystery beyond us. And yet, we cannot be mistaken that the Hand of the Infinite—or Something—reaches across the veil to still the turmoil of the soul and give us the peace that passeth understanding.

We are not big enough to conceive infinite time and space. We are likely cogs in the wheel, though. After training—it takes a lot of training—we come to

(Continued on Page 1048)

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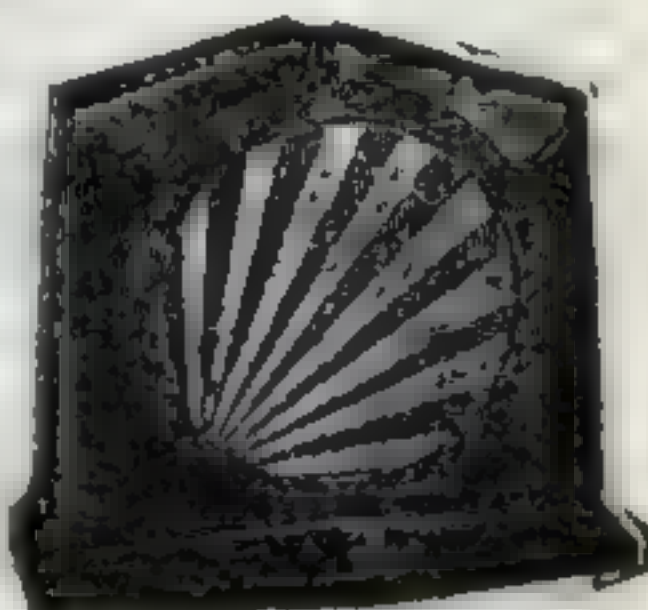
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THE READER SPEAKS

(Continued from Page 1047)

realize this, and more. I had not intended to go so far, but I trust this will have given you an idea of what I have discovered. Next month I will relate some circumstances that have proved to me that while I amount to nothing I was not put on earth to suffer. Until then,

Edsel Newton,
Havana, Cuba.

(Mr. Newton's experiences, fighting between doubt and faith are very interesting because they are similar to what thousands of people pass through. Naturally we are not competent to pass upon his conclusions. No one is. Religion is such a personal matter, that one can sum up the thing by saying, "If you know the truth of existence, if you have an understanding of the world, and are freed from superstition and ignorance, then any religious faith that you embrace, no matter what its nature (or even the lack of a faith) is the best thing for you."

The belief that science can learn the most intimate secrets of the universe is now being demolished—and by scientists. Men like Eddington, Jeans and Einstein are telling us that there are certain things we will never know, that materialism does not satisfy man, and that he must have a certain amount of faith to make his life complete. The cycle of agnosticism atheism and doubt that started with Darwin and Huxley is now passing on to another cycle. Einstein stated recently in the New York Times that the great religion is a cosmic sense of harmony with the greater universe. Perhaps that will be a future religion. *Quien sabe!—Editor*)

Find Out About Her

Editor WONDER STORIES:

As Phil Cook would say, "Hold on to your seats, folks, 'cause it's coming at you!" I have already given you my opinion of "The Outpost off the Moon" so I won't go over it again. "The End of Time" wasn't very bad, but I must admit I wasn't engrossed by it. However, Mr. Kirkham committed that atrocious error of time-traveling stories which should not be seen in these pages. Granting that travel into the future may be possible, a man could never come back again. You know the old grandfather business. He could travel into the future, see a man, travel into the future, see a man, travel back in time, and kill the man's grandfather while the grandfather was a little boy. I thought you once said you wouldn't let such an error occur again. There wasn't much new about the whole story.

I will pass by "The Silent Scourge" without comment. "The Synthetic Men" was an interesting story as are all of Mr. Repp's works. You could use more of his stories. I wish, though, that all the stories didn't describe the heroine as the most beautiful girl the hero had ever looked upon. They have him fall in love with her before he has a chance to find out anything about her. Chorus girls are quite beautiful as a rule, but it would be a mistake to fall in love with one before you have a chance to find out anything about her nature. But keep Mr. Repp, he's worth it.

The "Struggle for Venus" was a very good story. It was a little different from the majority of such stories. There are only two things that I can criticize. In the first place, I hate to think of that poor man sailing through space all alone for two whole months. It would have been so easy to give him a companion. Then there's the matter of blowing up the enemy ship. Army bombers using vanned, streamlined bombs, special releasing equipment, delicate range finders, drift indicators, etc., and with years of practice, find it difficult to hit so big and stationary an object as a bridge. In this story, with none of these assets, the hero hits an enemy ship and thinks it no great feat. Oh, well, I guess it comes natural to some people. Anyway, it was a great story.

"The Air-Plant Men" was a poor story. There was not a single point worthy of interest in the whole thing. It was altogether too brief, and most of all it was not Science Fiction. If you are going to call your material Science Fiction you ought to keep the magazine pure, especially when you have a story like this one.

THE READER SPEAKS

Excuse my paragraphing; when I get started I don't pay much attention to such details. By the way, if you don't like the way I'm trying to run your magazine, just say so. You won't hurt my feelings.

Philip Waite,
3400 Wayne Ave.,
New York.

(Mr. Waite gives us his usual well-informed and well-balanced comments. Perhaps, as he says, men, especially scientists, should exercise a scientific judgment of beautiful young women before proceeding to fall in love. In some future age, they might analyze scientifically the qualities and personality of their prospective mates to determine with scientific thoroughness just what lies beneath the beautiful skin. Graphs might be constructed showing temper, as well as temperament; experiments might be tried to determine whether "she" would buy a fifteen or fifty dollar dress were the opportunity offered. The psycho curves of both the man and woman might be plotted and compared to see how well they agree.

But unfortunately, for the present we are just weak, emotional mortals; and faced with a pair of dancing blue eyes, science and analysis disappear in the mist.

We must disagree with Mr. Waite with regard to "The Air-Plant Men." Most of the readers who wrote in, liked the story very much, although some would have preferred it longer. If the picture presented of great bags of gas, sentient beings, who are able to spread not only themselves but also their feeding grounds over the entire earth, is not science fiction, then we ask respectfully, what is? However, that question we leave to our readers. We would like some definition from them, just what is science fiction and what is not? We will print the best letters.—Editor.)

Cities on the Cloud

Editor, WONDER STORIES:

Where in the world did L. Taylor Hansen get his theory to write "The City on the Cloud"? Is there any truth in the original story, or is it just pure fiction? I have seen things on the same order as published in that story.

I am a young man and a miner and prospect in my spare time, in Death Valley and its vicinity. At one time, as stated in the story, saw a city similar to that described by Hansen, but not in Death Valley but close to it in the Cotton Wood range of hills. So please let me know if there is any truth in this, and print it in your magazine, for I am going back into Death Valley.

I am not sending my name, for I don't want people to think me crazy. But it is true, my saying that I saw a city in the clouds; and as for mirages you can see plenty of them around on the dry lakes of Death Valley. I once saw a big body of water and a boat landing and boats sailing on the water and a city close by. The city looked an awful lot like Elsinore, City, Cal. Lake Elsinore is about 250 miles from lake close to Silver Lake about 8 miles from Baker City, Cal. Lake Elsinore is about 250 miles from Silver Lake.

A Reader of WONDER STORIES.
Richmond, Cal.

(Although it is not the custom to print unsigned letters, the Editors were impressed with the sincerity and truthfulness of this letter. We hope that our correspondent reads this comment to know that Mr. Hansen did base his story on actual fact. According to him, the story is based on actual occurrences and the professor in the story is a real person.

Certainly we would be foolish to sneer at such things as Mr. Hansen and our unsigned correspondent wrote about. We know that mirages occur, and that they are projections against the horizon of scenes many miles away. The air in this case acts as a gigantic reflector, to throw images from far distant places to the eyes of our Death Valley habitues. We would not go so far as to say, with Mr. Hansen, that pictures of other worlds can be seen by way of atmospheric refraction, but we do believe that the range of such phenomena may well be thousands of miles.

We invite Mr. Hansen to give us more facts upon which he based his story "The City on the Clouds", for he has introduced a subject not only fascinating but extremely stimulating to the imagination.—Editor)

(Continued on Page 1050)

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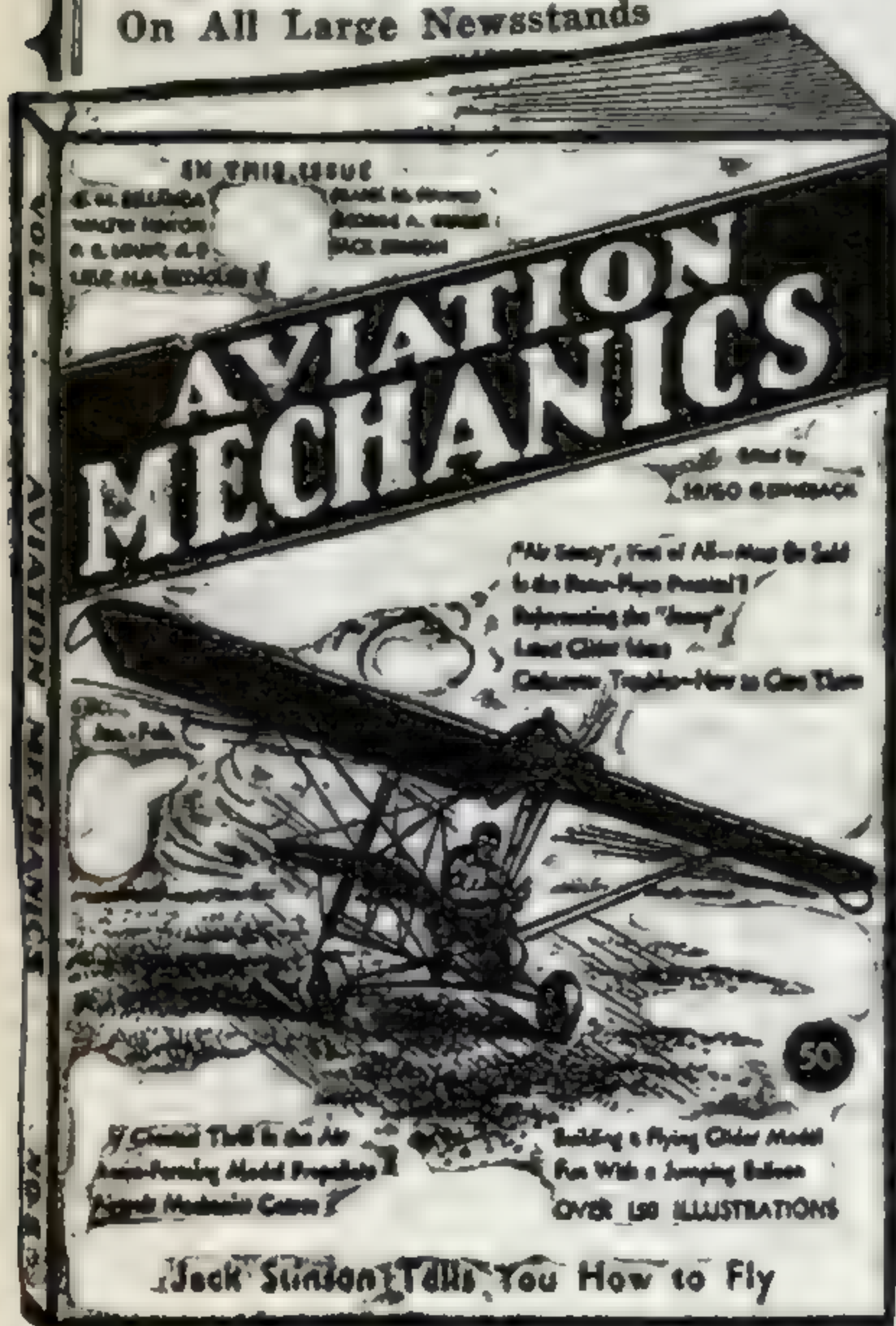
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THE READER SPEAKS

(Continued on Page 1049)

Supposed to be Human

Editor, WONDER STORIES:

Your "mag" is getting better every issue. The new size is a great improvement. Anyone gets his money's worth out of less space. I mean that the stories are just as good if not better; and they are in an easier handled book.

Any science fiction reader who doesn't like some romance in his stories ought to wake up to the fact that he is supposed to be a human being capable of loving someone else. On my part, I enjoy a story with some romance better than one without, although I like all science fiction.

If I remember correctly, there were some comic scientification about a scientist who invented a seltzer-mobile and several other comic ones. Can you get some more like them?

When are you going to put six more of those Science Fiction Library on the market? And the Science Novel as well? I'm waiting for them. This mag. is certainly an improvement over the old mag. you once edited. Keep up the good work!

Can you get a sequel to the interplanetary story in which a Jupiter princess came to earth in a space ship which became a near meteor? If I knew the author, I would tell his name, but I loaned that mag. The stories are well regulated. How about an interplanetary trip to some very distant star in some story? Also a few more about the future as shown by the "Into the 28th Century" story.

These mags are a great help to anyone taking up a Science course in College. I can get points from them when they are too deep in class.

Mr. Juve and Mr. Repp are good. I like their stories. They make even the most profound statements clear. Their style is good and they include romance in their stories. Readers who don't like them don't like themselves.

Add Chemistry stories to the others if you can.

William Pye,
Box 121, Conn. Agricultural College,
Storrs, Conn.

(We do not know which Jupiter story Mr. Pye refers to; but we can offer him as a fair exchange for it a sequel to "The Rescue from Jupiter" by Gawain Edwards. Beginning in the next issue, Mr. Edwards' "The Return from Jupiter" will delight our readers. There were many problems left unsolved and hanging fire when the "Rescue" was finished. In the opinion of the Editors the sequel is even better than the original. Mr. Edwards is also the author of that science fiction book called "The Earth Tube" reviewed in this issue, which excited so much comment.

We also have an interstellar story on hand from the pens of that unbeatable combination, Schachner and Zagat, which will be published in the near future, as well as a long interplanetary story by D. H. Lemon, the amazing incidents of which take place on an unnamed planet.

The "Flight into Time" in the present issue should please our correspondent, and satisfy his desires for a story of the future. However we have some corking stories of all kinds ready to give to our readers every month—Editor.)

The Humorous Aspects of Time Traveling

Editor WONDER STORIES:

Some time ago you asked us (the readers) what our opinions on time-traveling were. Although a bit late I am now going to voice four opinions on Henry F. Kirkham's favorable pastime (Time Traveling).

(1) Now, in the first place if time traveling were a possibility there would be no need of some scientist getting a headache trying to invent an instrument or "Time-Machine" to "go back and kill grandpa" (in answer to the age-old argument of preventing your birth by killing your grandparents I would say: "now who the heck would want to kill his grandpa or grand-ma!") I figure it out thusly:

A man takes a time-machine and travels into the future from where he sends it (under automatic control) to the past so that he may find it and travel into the future and send it back to himself again. Hence the time machine was never invented, but!—from whence did the time machine come?

THE READER SPEAKS

(2) Another impossibility that might result would be:

A man travels a few years into the future and sees himself killed in some unpleasant manner,—so—after returning to his correct time he commits suicide in order to avert death in the more terrible way which he was destined to. Therefore how could he have seen himself killed in an entirely different manner than really was the case?

(3) Another thing that might corrupt the laws of nature would be to:

Travel into the future; find out how some ingenious invention of the time worked; return to your right time; build a machine, or what ever it may be, similar to the one you had recently learned the workings of; and use it until the time that you saw it arrive, then if your past self saw it, as you did, he would take it and claim it to be an invention of his (your) own, as you also did. Then—who really did invent the consarn thing?

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AND OTHERS IN THE

WINTER 1931 WONDER STORIES QUARTERLY
ON ALL NEWS STANDS JANUARY 1, 1931

(4) Here's the last knock on time-traveling:

What if a man were to travel back a few years and marry his mother, thereby resulting in his being his own "father"?

Now I ask you, do you think traveling in time, in the manner most of your authors put it, is possible? (Now please don't get the idea that I think it can't be done, to some extent, because it might be done through Suspended Animation).

Well I guess I have put enough cotton into the inkwells of H. E. Kirkham, F. Flagg, M. J. Breuer, and H. G. Wells (now what ever prompted me to say that!)

Jim H. Nicholson

(Member Boys' Science Fiction Club)

40 Lunado Way,

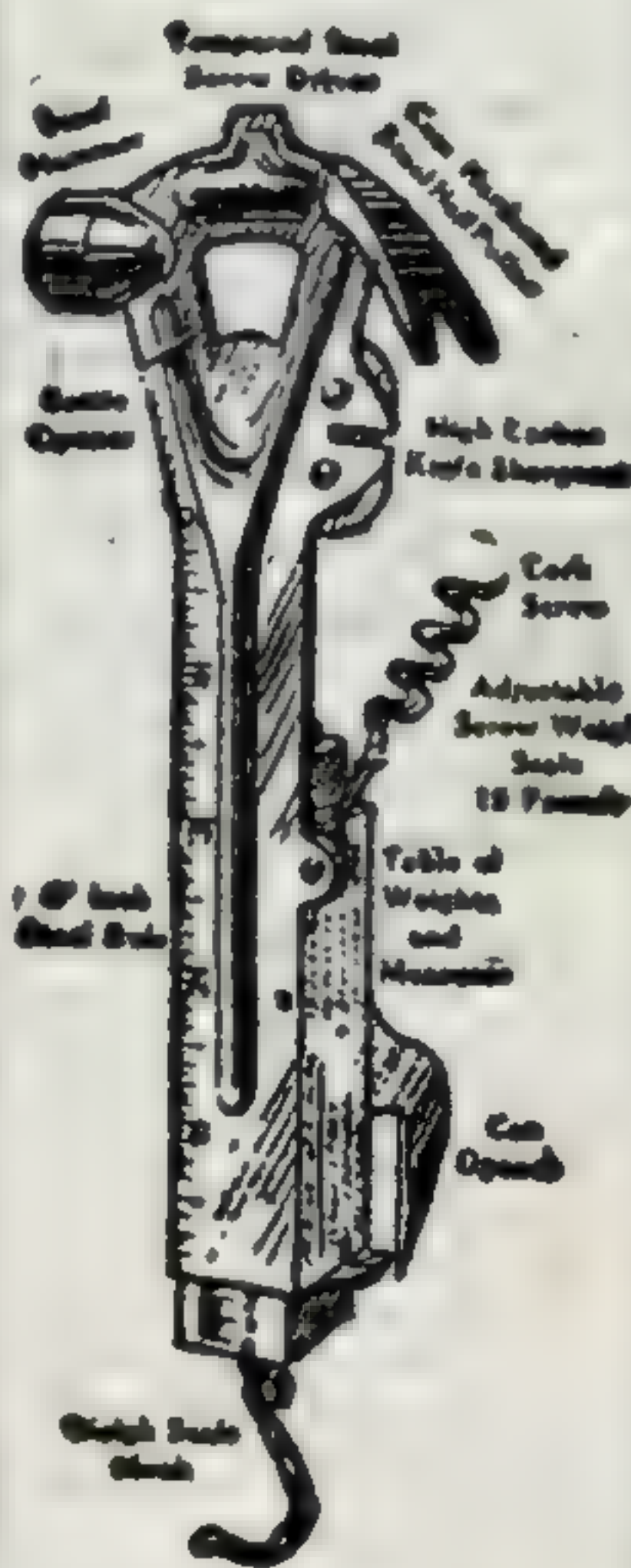
San Francisco, Cal.

(Young Mr. Nicholson does present some of the more humorous aspects of time traveling. Logically, we are compelled to admit that he is right—that if people could go back into the past or into the future and partake of the life in those periods, they could

(Continued on Page 1052)

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THE READER SPEAKS

(Continued from Page 1051)

disturb the normal course of events, as Mr. Nicholson has pictured it.

However our publishing of such time traveling stories, as a change from our former policy, is based on two thoughts:

The first is that although logically the time traveling episode will lead to the sort of absurdity Mr. Nicholson pointed out, logic may not be the whole truth of the matter. Time traveling necessarily means a projection into the fourth dimension and an entering into a new order of life. Before the Einstein theory was propounded, people would have received its edicts with derision as being contrary to logic. The idea of the constancy of the velocity of light for example is absurd until it is explained by the reduction in length of the body and the reduction of time. Even this idea of the change of time between two bodies one of which is moving at or near the speed of light, (as Dr. Breuer pointed out so well in "The Time Valve") is logically absurd, yet true.

So we must realize that the laws of nature we perceive and the things we call logic are not the whole truth of nature and we must be prepared to see some of our logical notions rudely shattered.

This leads to the second reason for permitting time traveling stories. Once we admit that time traveling is theoretically possible, the allowing of the time traveler to take part in that world of the past or future (we are not inclined very much to permit such past time traveling stories for the past is fixed) gives him the opportunity to develop a much better story. After all the reason for a time traveling story is not so much to travel in time but to show what our future civilization is to be like. If the story shows in a vivid, interesting and imaginative manner what our race of the future is to be like, then it has served its purpose. Of course Mr. Nicholson is right in saying that the only safe way of preserving logic in time traveling is by suspended animation. But who of our readers would want every story to open, "And as he opened his eyes, they met a strange sight."

We hope this explains our point of view on time traveling. Of course if we are wrong we want to be told about it.—Editor)

Regarding A Pain in the Neck

Editor WONDER STORIES:

Regarding a pain in the neck, if anyone was endowed with the ability to provide this sensation, one Harry Pancoast of Wilmington, is certainly a master of art. It is rarely that my fur is rubbed the wrong way violently enough for me to write a reply to another individual's criticism, but the above mentioned individual took only about three minutes to stand my hair on end.

He claims you do not publish condemnatory letters—Holy Smoke, was Booth Cody's epistle a love letter? Right there was one of the most insolent, outspokenly insulting, outrageous pieces of blackguardism I have ever had the ill fortune to read, but you published it, put it up to the readers—and we know what their verdict was! Mr. Cody's ears should have resembled a miniature sunrise when he found out what your loyal readers thought of him. Harry Pancoast is very little better, although he is brave enough to sign his own name.

The quality of your stories maintains a high level, and I particularly approve of "The Outpost on the Moon". "The Soulless Entity," besides introducing an idea which I believe is new, was well written and is that kind of a story that is not soon forgotten. However, "The Satellite of Doom" takes the prize in the last issue, largely because of the realistic way in which his characters talk and act. It was not the perfect English-and-clothes-model kind of story.

Glad to see an announcement that some of our older authors will return in the next issue. We need more of them.

Floyd P. Swiggett, Jr.
Las Vegas, New Mexico.

(Mr. Swiggett's loyal letter was appreciated. Through the dull dark days that comes to everyone's life, they cheer one in the thought that his efforts are understood. This goes too, for the many other letters that expressed the same sentiments as Mr. Swiggett's.—Editor)

THE READER SPEAKS

Love Necessary to Life

Editor, **WONDER STORIES**:

So many readers proceed to tell us where the authors fail in their science, or where some one does not know his science, and so on. Others berate certain authors for using female characters and embodying romance in their stories. Judging by the language and expression used in the various letters, those who "rave and berate" the most seem to show the greater lack of understanding of the things they criticize.

Just what is science? Is it not knowledge of the phenomena of nature, and the employing of that knowledge for the convenience of the possessors, and the seeking to extend that knowledge farther into the unknown, by ordered reasoning and experimentation? If one placed his hand on a red hot stove and would not know that he burned his hand, that would not be science. But if he knew the red hot stove burned his hand, that would be science. If he did not know he burned his hand he might discover by reasoning and experimenting that his hand was burnt and by further reasoning and experimenting find that he did not burn his hand but as a result of the fire in the stove that made it red hot, the red hot stove caused the burn of his hand.

One of the first things found out in life, known, or perhaps felt millions of years before reasoning intelligence began to evolve, was the wedding of the two sexes before life could be reproduced. Reasoning beings discovered that one sex was not a complete entity; that one sex alone was not complete, but required the other sex to round out the full scheme nature intended. The sexes are endowed with desire, attraction and emotions for one another. That is the scheme of all life and any one who denies this can not lay claim to being scientific, for he has denied one of the first principles of all life. Reasoning creatures have termed these things romance, love, and the twain lead to marriage and the perpetuating the species.

In general, I am firmly of the opinion that any story that has not a reasonable amount of romance, love if you please; a hero and heroine, in it will be unsatisfactory to all normal readers.

Henry S. Hatton.

Greentown, Ind.

(Mr. Hatton injects a new element into the perennial "cold-blooded" versus "a little romance" controversy. Mr. Hatton attempts to turn the arguments of the diehards against themselves—with what result? It is true, as he says, that the mating of the sexes is one of the most fundamental facts in all science. We will be fair and give the other side a chance to rebut this thesis. We suggest however that the shortness and conciseness of Mr. Hatton's letter be taken as a model. Think out what you wish to say, and then say it as shortly and convincingly as you can.—Editor)

SCIENCE QUESTIONS AND ANSWERS

(Continued from Page 942)

quite a distance from this center of gravity it must also be rotating about it.

Continued observation over many years shows that our sun is moving through space toward the star Vega and at a speed of some 13 miles per second, carrying the solar system with it. We are not certain that this is an absolute motion, for it has been determined only by isolating the velocities of a number of stars with reference to the sun.

Now since the sun lies about 47,000 light years from the center of the Milky Way, it is quite possible that the sun is pursuing an orbit about this center, its orbit being some 300,000 light years in extent. Even assuming that the sun has a velocity of 1,000 miles a second with relation to this center then it would take it some 56,000,000 years to complete one revolution. If we compare this with the 2,000 odd years that we have had astronomical observations of any value, we can see that in that period the sun will have completed only an infinitesimal portion of its orbit, and any attempt to plot or determine that orbit is quite useless. There is no doubt, however, that the sun is not a freely moving body in space; it is subject completely to the control of the motion of the galactic system.—Editor.)

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BOOK REVIEW

THE EARTH TUBE by Gawain Edwards, 300 pages, stiff cloth covers; size 5 x 8. Published by D. Appleton and Company, New York. Price \$2.00.

The author of "The Rescue from Jupiter" has really outdone himself in the present volume. It is truly what the publishers describe as a "powerful and vivid romance—of Pan-Hemispheric War." Mr. Edwards has made the most of this opportunity to use his personal knowledge of the world gained as a newspaper editor to portray in the most realistic fashion not only the progress of a war of science but also the ineptness of public officials faced with a national crisis. His Dr. Angell, Secretary of War of the Americas, who blunders his way through the conduct of the war against the invaders, yet makes it up by his brilliantly oratorical speeches, is a character that cannot be forgotten. The Asians, a race of emotionless scientists (reminiscent of the Soviets of to-day) after conquering China and Japan, bore a tube of some indestructible material through the earth, and begin their invasion of the Americas. All defense is useless against their tremendous tanks made of the impregnable material *undulal*. South America falls and the victorious Asians advance toward the Isthmus of Panama. King Henderson, a young scientist, enters the earth tube and makes his way into one of the Asian's cities searching for the secret of *undulal*. He is captured and condemned to death. He escapes and returns to the surface in time to build shells capable of destroying *undulal*. At the verge of dissolution, the forces of North America win a brilliant victory against the Asians and throw them back to South America where the invasion collapses.

Despite the wealth of scientific instruments of the future that he pictures, never does Mr. Edwards lose his powerful grip on reality. The world he shows us is one of people: weak, vain, hesitating even when faced with the ruin of their race. Mocking our social system, Mr. Edwards has the Asians send down a rain of gold upon New York in order that the people may become feverish searchers for the metal, and our financial system be destroyed. There is but one way to counteract this national panic. Henderson induces the president to declare martial law and to promise to distribute free gold and free paper money as long as the supply lasts. He hopes by that means to destroy forever the illusion of value in "that which glitters."

It is a difficult book to read at a single sitting, yet it is equally difficult to lay it down before it is finished. It is a serious book, for it aims an accusing finger at many of our social and national evils; yet to maintain the balance of justice, it points an equally accusing finger at the system which creates a State as God, and crushes the miserable humans who dare defy it.

JUST IMAGINE, a musical, talking film.

Produced by the Fox Film Corporation, and exhibited at the Roxy Theatre, New York, beginning November 20, 1930.

For those who do not take their science fiction too seriously, *Just Imagine*, a film portraying the New York of 1980 is cordially recommended; for with its tongue in its cheek, the picture shows us many of the wonders that our science fiction authors have been writing about.

A man of 1930 who has been killed revived in 1980 and finds himself in a changed world. The laboratory scene, by the way, depicting the apparatus used to revive our genial comedian El Brendel, is one of the best of the picture, for humor has vanished there and the gleaming apparatus, the retorts, the great coils, the sense of power and mystery, will delight the heart of every science fiction fan.

A thin story runs through the picture. Our hero has been denied the right to marry the girl of his choice, because his rival is a man of superior accomplishment. The young man thereupon agrees to pilot the first space ship to Mars in order to distinguish himself. The scenes on Mars are among the funniest of the picture. The Martians, human beings all, seem to come in pairs.

BOOK REVIEWS

Each one has a twin, veritable Jekylls and Hydes, one of the two representing the good and one portraying the bad qualities of the pair.

Falling from the hands of the "good" into the clutches of the "bad" half of the population, our pilot with his friends finally escapes and returns to earth in time for the pilot to claim his beloved.

The New York of 1980, scenes of which accompany the story "A Flight into Time" in this issue, is a metropolis of gigantic towering buildings, between which flit the helicopter planes used by everyone. Food and even drink comes in capsules, while babies of desired sex are obtained by merely putting a coin in a slot.

The trip to Mars maintains a semblance of verisimilitude, although the rocket ship "with gravity neutralizer" appeared to be rather small and insubstantial. It was a pity that more scenes of the heavens from the space ship were not afforded. The time taken for the singing of several silly, inconsequential songs could very well have been used to portray more vividly the dangers of the interplanetary voyage.

As an experimental effort, the picture was very well done. It is cordially recommended. It is hoped however that with this humorous story as a start, progressive enterprises such as the Fox Company can be induced to try a more serious story, in which the more serious and tragic aspects of future existence can be shown.

ULTIMO—An Imaginative Narration of life under the earth—with projections by John Vassos and the text by Ruth Vassos. 96 pages, stiff cloth covers. Size 8 x 11. Published by E. P. Dutton and Company, New York. Price \$5.00.

This book is what might be called an aristocrat of science fiction. In a large sized book of beautiful binding, the finest printing and paper and with futuristic drawing with a tremendous imaginative appeal, there is told the story of the death of the earth's civilization.

The story is told from the point of view of a man who has received permission to leave on a space ship as member of a crew to explore the habitability of a planet in "the third star system." Our sun has long been dying and the civilization of the earth has been carried on with dignity but monotony within the earth's bowels. But the lack of newness in the standardized subterranean existence, the lack of adventure, the monotony of color, shade and sound have all provoked a desire on the part of the more adventurous to risk the perils of an interstellar journey to found a new race on a new world.

The story accompanies the pictures, and both have a deep and profound appeal by their sense of the gloom, the compression and the endlessness of the lives of the subterraneans. As the sun gradually died, life was carried on precariously on the surface, but even that failed and by burrowing into the earth like field mice, the race founded a new home. Everything for comfort was provided, work was not hard, there were no dangers to this existence. But the lack of danger and uncertainty led some to venture to the surface for the pleasure of hunting bears and wolves. As the cold became intensified even this pleasure was denied and people sought an extra-legal pleasure in hunting down the great bats that abounded in subterranean caverns and matching two of them in battle.

The children of the race were produced only by a decree of the government by eugenically mated couples. Sexual cohabitation for all other purposes was allowed without restriction. The only goal for these people living almost endless lives lay in service to the State and promotion from one rank to another.

But man is, as Mrs. Vassos so eloquently points out, not an animal destined for a static existence. The very breath of his being demands change, conflict, uncertainty and danger. He lives only by escaping, as Carlyle said, the death of attainment.

For those who wish a handsome addition to their library, of a story told beautifully and powerfully in word and picture, this book is enthusiastically recommended.



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"You folks must think I can't play!"

I cried, when they laughed at my offer

IT was the monthly get-together of our little group and the fun was at its height. Mabel had just finished singing a touching version of "Frankie and Johnnie" when I offered to play.

"Boy! This is going to be good! Did you folks hear that? Jim said he'd play for us!" cried Tom.

I pretended to be highly insulted. Drawing myself up with mock dignity, I said, "You folks must think I can't play! Why, the very ideal!"

This caused a fresh explosion of laughter. "Can't play!" called someone. "Say, if I could play as well as you, I'd be digging ditches right now!"

Seating myself at the piano I held up my hand to command silence. Then, with a good many flourishes I opened "Swanee River," turned it upside down, and began to play.

And how! I traveled up and down that keyboard, with my one good finger, as Tom called it, until the crowd howled for mercy. Finally I turned around and demanded, "Now who says I can't play?" "You win!" came from all sides. "Only please don't demonstrate any more, for the love of heaven!"

But instead of getting up from the piano, I suddenly swung into the haunting strains of "The Pagan Love Song." But with what a difference! This was not clowning, but real music. I played as I had always longed to—beautifully, effort-

lessly, with real skill and feeling.

No wonder the crowd could hardly believe their ears! The moment the piece was finished they overwhelmed me with questions. *Where had I learned to play? When had I studied? Who was my teacher? Why had I kept it a secret?*

How I Taught Myself to Play

I told them the whole story. Ever since I was a child, I had been crazy about music. But, like most children, I hated to practice. That's why, after a few desultory attempts, my music lessons were given up, and I had to content myself with hearing others play.

But every time I pepped up a party with my one-finger clowning the longing to really play returned. However, I had no time now to take lessons and spend hours practicing, to say nothing of the expense of a private teacher. Then one day I happened to come across an ad of the U. S. School of Music.

"Why, that's a correspondence school, isn't it?" interrupted Tom.

"Yes," I told him. "The ad offered a Free Demonstration Lesson to prove how easy it is to learn to play at home, without a teacher, in one's spare time. I sent for it.

"It was great. I decided to take the course. I learned in my spare time, after work, and thoroughly enjoyed each lesson. For there are no long hours of practice—no tiresome scales—the U. S. School of Music way.

The pieces I had always longed to learn—jazz, classical, anything. But I didn't want to tell you folks until I was sure of myself—you know, no clowning.

They were dumbfounded. But in a moment they eagerly demanded piece after piece—dance music, ballads, snappy songs. Now I'm never invited anywhere that I'm not practically forced to entertain with my music. As Tom says, learning to really play has certainly made me popular!

No Talent Needed

This story is typical. People who once didn't know one note from another are good players today—thanks to the U. S. School of Music.

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